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BRITISH EAST AFRICA PROTECTORATE

BY

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The East Africa and Uganda Protectorates occupy the large area known as British East Africa. The first named Protectorate covers a part of Africa which, twenty to thirty years ago, was considered the typical habitat of savage tribes, many of them warlike and dangerous of approach. It was one of the few remaining channels of the interior slave trade, and the home of innumerable wild animals. Its geography had not long been ascertained. The three huge masses of mountains standing unique and imposing with their roots in the tropics and their summits in eternal snow,—Mounts Kilimanjaro, Kenia and Elgon,—were marvellous features; and the great Rift Valley, with its massive escarpments, had been traversed though not explored.

It is now only fifteen years since the first sod of the Uganda Railway was turned. The enterprise was projected, in the first instance, as a semi-philanthropic and semi-political undertaking. The British Government decided to construct it in order to facilitate the stoppage of the slave traffic and to gain better access to its sphere of operations in Uganda and Central Africa. Since the railway was built the whole aspect of things has altered. It is now known that these wild tracts make a wonderful, fruitful country, that the prevailing altitude is such as to modify the temperature and that, on the equator in Africa, is a great region that can scarcely be distinguished in climate from Southern Europe. The warlike tribes are now discovered to be comparatively peaceful and easy to govern, the most

warlike being the least numerous. The fauna roaming over the great highlands are now found to exceed in number and variety, even the stories told of them by travelers.

While many unexpected advantages have been discovered, the old disadvantages for the European, anticipated by the early travelers, have proven unfounded. During ten years' occupation by white settlers of the highland region, there has been little to indicate any serious drawback to European occupation. The death rate is not abnormal and children are born and reared with every success. As in most new lands, a few deaths in succession from local causes arouse the fears of newcomers; but apart from a few cases of malaria, mostly of a very mild type and rarely fatal, no disease has proven to be a serious bar to permanent settlement by European families. This particularly applies to the highlands. At the coast, on the shores of Victoria Nyanza, and in Uganda itself, some risk is present. But even there the conditions are remarkably favorable when compared with other regions under similar conditions. Mombasa, the port of the Protectorate, is in the same latitude as Ceara in Northern Brazil, and the French Congo Coast. It is on a low-lying island, not five degrees from the Equator, and has no range of mountains adjacent to affect the temperature and climate. It is an Arab and Indian town of ancient repute and mostly consists of numerous narrow streets so typical of the East, with a large native African population; yet it is comparatively healthful for the European and is safe for the visitor, if trying climatically to the European resident. On the western coast of the Protectorate, the Lake Victoria littoral, conditions prevail similar to those in Mombasa, though the natives at the lake have been sufferers from sleeping sickness and an occasional, though not very serious, visitation of the plague. Neither of these dread diseases affects the European; it is extremely rare for a European to contract either disease.

The contour of this land between the ocean and the lake, as shown by the railway elevations, is remarkable. By rail, the traveler rises rapidly from the coast, without climbing any defined mountain range, until at Nairobi, 300 miles distant, he is at an altitude of 5,000 feet. Twenty miles farther the railway has climbed to 8,000 feet; then the Rift Valley is approached with a sudden drop of 2,000 to 3,000 feet; again, seventy miles farther, the line attains an altitude of over 8,000 feet, and then, from this crowning elevation, the country suddenly drops to the Lake, another 4,000 to 5,000 feet. It is a country lifted skyward, so to say, with three huge sentinels of snow-capped

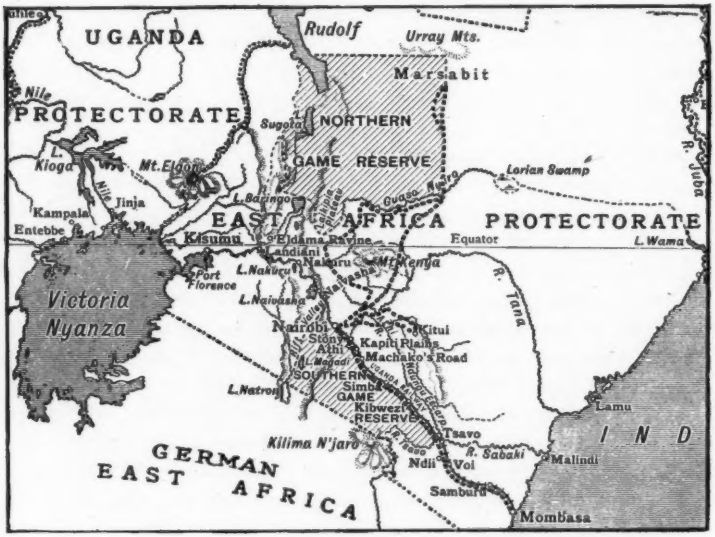
summits overlooking the whole. At Nairobi, on a clear day, the two mountains, Mount Kilimanjaro and Mount Kenia, though separated by 250 miles, are both seen with the naked eye.

It is on these uplifted highlands, unique in Equatorial Africa, that British settlement is making headway. The farm holdings range from 1,000 to 10,000 acres in area. A few much larger areas are held by certain individuals and companies, notably the East Africa Syndicate in the Highlands at Lake Naivasha, and the East African Estates along the Coast, the latter with 100 square miles of country. Lord Delamere has something like 100,000 acres, and a few others have 20,000 and 50,000. But, for the most part, the men who are resident and working the land are satisfied with from 2,000 to 5,000 acres. The larger tracts are held mainly by graziers and sheep farmers. It is a question which of these two classes is making the larger progress. The cattle or dairy farmer finds grazing in almost any portion of these highlands of a quality that can scarcely be surpassed in any other country. Generally speaking, the pastures are good throughout the year, as, excepting in the highest settled altitudes of over 8,000 feet, there is no frost, and at this altitude frost is light and infrequent. Cattle, poor in flesh or underfed, are almost unknown. Another great advantage to the stock breeder is the remarkable adaptability of the native humped or Indian cattle to grading. A half bred animal loses most of the characteristics of its native strain and approximates the thorough-bred side of its derivation. The two-third grade are not distinguishable from the pure Ayrshire, Devon or Shorthorn, except by an expert. Hence almost all the cattle farmers have graded up from the native stock by pure bred bulls, and the need of a pure bred imported herd to breed from is not felt. The increase is also good, and the milking qualities, if not quite so rapidly developed by grading as beef quality and form, are yet well sustained.

This is the bright side of the picture. The other aspect is the presence of disease. For the last few years East Coast fever and gastro enteritis have ravaged the stock, also a form of rinderpest. These diseases, despite all efforts, are not yet subdued. Some farmers have lost as much as fifty per cent. by these scourges; others have suffered no loss. But it speaks well for the land and the ranching industry that, despite disease, there is no diminution of cattle. On the contrary, a good increase is shown; and the price of cattle has not fallen during the long spell of disease. There has been no panic, and the farmer has shown no signs of abandoning his pursuit

of ranching. The prices have been well maintained, not on account of scarcity of stock, but because the holders of cattle are, as a rule, not sellers, but buyers. A cattle sale always draws a crowd, and the prices current are £10 per half bred cow and calf, or in calf; £6 to £8 per native heifer or cow; and from £3 to £5 for steers or oxen. The new-comer and the resident farmer who is founding a herd, are the factors in the maintenance of prices, and good authorities believe that comparatively high prices will continue for some years.

A fact that encourages stock raising has been the establishment and intelligent up-keep of a government cattle experimental farm.



British East Africa.

One is at Morendat, in the Rift Valley, near Lake Naivasha. Although not an ideal cattle country, but a good sheep run, this spot was selected for its convenience, and its general excellence. Here, for some years, experiments have been made in crossing the native breed with various pure bred strains. The results have been deemed remarkable by every visitor who has inspected the resultant stock. The apparent difference, in size, shape and weight, between the pure bred Hereford, and Shorthorn bull, and the half bred animal, is scarcely noticeable. The three-fourths grade is practically like the

original pure bred. Hence the policy of the farmer has been to secure as many good native heifers as possible, and grade up with pure bred bulls or even three-fourths bred. Many of the natives have great herds of cattle. A large proportion of these herds show a natural immunity from tropical diseases which enables them to resist diseases which are common in tropical Africa. They have suffered large losses through neglect of proper precautions but these outbreaks of disease have not been very disastrous.

Sheep breeding on the other hand, is little affected by diseases. The sheep farmer has very good prospects before him. Wool has for some time been exported. The cross of the native sheep with the Merino, Lincoln, and Suffolk strains has been very successful. The progeny of the hairy native ewes exhibit a fair fleece at first cross. The two-thirds bred have the appearance of the pure bred strain, and the seven-eighths cross is not to be distinguished from the thoroughbred, the wool staple, only after close commercial examination, showing somewhat inferior, and the market value being very slightly less than the pure bred.

In pure agriculture the most successful permanent crop in the Highlands of high value, is coffee. Coffee plantations are now yielding very good incomes to their owners, and the industry, though only in its infancy, is still sufficiently advanced to be classed as a proved commercial success. The local demand has long been satisfied, and exports are now regular and increasing. The coffee bush, up to the present, has suffered no disease or disaster, such as overcame the industry in Ceylon, and elsewhere. Coffee cultivation is easy and the plant requires very small care. The returns per acre are, of course, higher than fair crops of a coarser character. Most of the coffee plantations are in the neighborhood of Nairobi, the capital.

Another valuable cultivation is that of black wattle. These plantations are now developing everywhere within the prescribed altitude of its growth. Samples of East African wattle bark have been tested by Professor Dunstan of the Imperial Institute, London. The tannin qualities are proved to be higher than the Natal product and only exceeded by some of the best kinds grown in Australia. But this industry has not yet proved its value in the same sense as those above mentioned. The plantations are as yet only three or four years old, but the trees are five to seven years in maturing.

A considerable amount of capital has been put into sisal, which, although much of it has been exported, has yet to be proven suffi-

ciently profitable. There are several large fiber estates, both sisal and the native sansiviera, and a species of wild banana hemp fiber is considered by many authorities to be of greater value than either of the others. Experimental plantations of the banana fiber have been planted and matured, but this class of product will probably await the right decorticating machine before being accepted as a staple commercial proposition.

On the coast strip, are several rubber estates. These are mostly owned by London Companies. Exports of rubber from the Ceara plant have followed their establishment, but the industry is still in its early struggle though its success seems assured.

In the highlands, hog raising has reached the stage where the erection of an up-to-date bacon factory is worth while. Hogs, it is asserted, may be reared more cheaply in East Africa than anywhere else in the world, as natural food is abundant, and the plentiful crops of maize and matama provide good artificial feeding. Ostrich farming is another proven source of income. The wild bird is comparatively abundant, is rigidly preserved, and by the capture of young birds and eggs, many of the farmers have acquired considerable herds. Feathers are now regularly exported.

In this remarkably diversified land the wheat crop is another growing source of income. Local wheat has now taken the place of the imported variety, and the wheat fields of Njoro, a great rolling tract of splendid soil, are ploughed and cultivated for miles. Some export of wheat is now being attempted.

On the northern borders of the territory, towards the coast, some large tracts of country have been taken up by capitalists and by Manchester cotton firms for the growing of cotton. The country in these parts lends itself to easy irrigation, while water transportation is available from the interior to the coast. In two other directions the capacity of the soil demands mention. Potatoes are always a safe crop. Many tons have been exported, principally to South Africa. Some shipments have realized good profits for their owners, while in many cases the cost of transportation has proven an effective barrier to profit.

One little region, at least, has proved itself a rich orchard district, namely Machako's, about twenty miles east of the railway and forty miles from Nairobi. Mr. and Mrs. Langridge's farm produces tons of fruit every year, a part of the crop being consumed locally and the balance going to the port to supply the shipping. The apples are large and have excellent eating qualities. Plums and apricots vie

in size and flavor with some of the best in any market. Fruit culture has also been successfully tried in other districts, but it is too early to regard this industry as a future source of supply for oversea markets.

A remarkable feature of the country's development is the rapid growth of settlement on the Guaso-Ngishu Plateau, a large region east of Mount Elgon and about ninety miles north of the railway. This large district has been occupied, mainly by South Africans, well-to-do Dutch immigrants. One or two pioneers from South Africa spied out the land, told their friends about it and thus attracted quite a large community. Although so far from the railway, the land has been eagerly taken up, in preference to other tracts nearer civilization. The climate is deemed perfect by all who have visited this region. Horses thrive there and cattle increase greatly. It is good for sheep and also for cultivation. It has become within the past two or three years one of the best populated districts in the country.

The market price of land in British East Africa varies greatly. There are still large areas of government land available, but the slow method of survey and allotment tries the patience of the immigrant. Occupied farms vary in price from six shillings to £2 per acre, the latter only given for proved coffee and wattle land. The prevailing figure is ten shillings per acre for 2,000 to 5,000 acre holdings. Guaso-Ngishu farms are now realizing this figure and, in a few years, prices will doubtless tend to rise.

All the world knows that the Protectorate is one of the chief homes of big game. Parties of sportsmen annually visit the country and it cannot be said, up to the present, that the quantity of game has been seriously depleted. The same amount of sport may still be obtained, though it is inevitable that, in a comparatively short time, the game will be driven from the vicinity of settlements. Since Mr. Roosevelt's departure several sportsmen have suffered from their temerity in lion shooting. During the last twelve months two or three deaths have resulted from these encounters. Elephants are well protected by the Game Laws and shooting is limited chiefly to the big bulls. Small ivory is confiscated and culprits guilty of killing young elephants are heavily fined.

Rhinoceroses are likely to disappear first, but hordes of antelope of every variety will long roam the great uplands and the wild and drier tracts of the back country. Around Nairobi itself and other settlements game is still plentiful.

The town and trade of Nairobi are gradually becoming more European. A whole street of town lots were recently put up at auction, realizing what is considered here as high prices. The plots were about fifty feet front, and seventy-five feet deep, the prices ranging from £150 to £300 per lot. Back lots may, however, be purchased at a much cheaper rate, while suburban areas range from £20 to £100 per acre. Real estate speculation is as yet very restricted, as the population is still small; but a good deal of the land is firmly held. All Government land is subject to development conditions, and the prevailing title is that of the 99 year lease; but the land law is still in a state of evolution, and the question of title is one which excites much political controversy. Freehold is obtainable on areas of about 360 acres; but grants of 5,000 acres are given on a 99 year lease.

The large native population, mostly confined to reserves, is said to number about 4,000,000. They provide the labor needed and thus far there have been few labor difficulties. The prevailing rate of pay is from four to eight rupees a month for unskilled labor, say from one to two dollars and the native provides his own food. The service, of course, is very crude, but the native speedily learns most unskilled vocations. Natives, also, are found working as masons, painters, printers, carpenters, and at other trades. One of the aims of the Education Board is to encourage the teaching of crafts by missionary and private employers. But the greater number of the skilled artisans are East Indians who are also prominent in commercial life. There is a considerable Indian population in the highlands, and on the Coast where they blend with the Arab and Swahili (native Mohammedans). A few of the largest firms and many of the smaller ones are Indian, and the same people do most of the up-country trading. Yet the European, despite pessimistic and alarmist utterances, is found to compete very successfully with the Asiatic. The tendency is towards a reduction of the Indian and an increase of the European firms.

With regard to the future of the country, it is not too rash to predict considerable prosperity. British East Africa is far richer in soil and production than any portion of South Africa, Rhodesia included. There have been no mineral discoveries of economic importance; but the soil in most parts is rich, and pasturage for cattle and sheep seldom fails from one year end to another. There is no winter and, in the highlands, no extreme tropical heat. Hail and thunder-storms are seldom experienced. Rain is plentiful and fairly

regular as to season. The range of products in this comparatively small country is remarkable—from wheat and potatoes to cocoanuts; from sheep, horse, and mule-breeding, to ostriches. So many products are now being grown commercially, with the country only partially settled and not yet started on systematic cultivation in a broad sense, that the future is bound to see large industrial development. Capital today is very scarce. Bank interest is scarcely below 8 per cent., and mortgages earn 10 per cent. Within a few years, there is little doubt that in many directions property will appreciate. The entire European population today is only between 2,000 to 3,000, of whom one-third are living at Nairobi. There does not seem to be any prospect of an immediate "boom" or rush, though new arrivals are slowly, but steadily, coming in. The departures from the land of those who have already settled are very few. Those who live in British East Africa seem to like it on first experience and have seldom found reason to change their minds. A considerable proportion of the settlers consists of persons who have visited the country on a shooting trip, become enamoured of it, and so decided to acquire land and settle. The soil being very bounteous, living is not expensive, and the table is well supplied with a large variety of foodstuffs grown in the country.

Imported articles, however, are dear, on account, first, of the heavy freight charges on over-sea goods (a fruitful topic for the local Chamber of Commerce, and it is hoped that the situation may soon be remedied); and second, the limited market open to storekeepers, who, having no quick returns, are unable to live on small profits. The country is only in its initial stage. The people rely for future economic growth, first upon the expansion of exports, and, second upon the fine climate which is attracting settlers and will attract more and more of them.

The Protectorate is governed strictly from the Colonial Office, through a Governor, Executive Council and Legislative Council. Three or four members of the Legislature are named by the public; all the other officials are Government servants. A movement is already on foot among the European settlers to demand that the nominees to the Legislative Council should be selected by the people. A grant in aid from the Imperial Government amounting to from £115,000 to £150,000 per annum reinforces the annual revenue, but the expenditure on the military service and the administration of the northern border very nearly balance this Imperial subvention.

A loan of £250,000 has been granted to the colony by the home

government to be spent partly on a line of feeder railway making towards the Mount Kenia district from the trunk line at Nairobi. Some of the finest land in the country is in this direction and the amount of grain grown among the natives around Kenia is known to be very great. There also are some large European planters of beans and sisal. The second project which this money will also cover is a deep water pier at the port, a comparatively simple engineering undertaking in view of the closeness and depth of the channel, ships of over 6,000 tons now anchoring almost within hail of shore.

DEVELOPMENT OF WHEAT PRODUCTION IN CANADA

BY

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A large area of the Canadian Northwest forms a part of one of three or four regions which give promise of furnishing a great surplus of wheat. In a paper* on the future wheat supply of the United States read before the Millers' National Federation Mass Convention at Minneapolis on June 22d, 1910, Mr. M. A. Carleton, of the U. S. Department of Agriculture, said that "a careful study of the conditions in Canada reveals a possibility in increased production far ahead of any other present exporting country." Many other authorities substantially agree with Mr. Carleton. Some writers have attempted to figure out the yield at a more or less remote date, with results that differ widely. It is futile to undertake to measure exactly the future wheat crop, although it is generally agreed that within a few years it will probably permit the exportation of several hundred million bushels annually. Already the yield is important though only a fraction of the wheat belt in the prairie provinces has yet been cropped. The maximum harvest was obtained in 1909 when 166,744,000 bushels were reported. This gave the Dominion seventh place in wheat production, it being surpassed only by Russia, the United States, France, India, Italy and Austria-

Science, Aug. 5, 1910.

Hungary. This paper aims to present a concise and reliable statement of the history and present situation regarding wheat production in Canada.

Information as to the area sown to wheat and the yield previous to 1882 is very scanty. In that year, the government of Ontario undertook to compile statistics annually relating to wheat production in the province. The following year a similar plan was adopted by Manitoba, and later, the other provinces undertook the same work. But, until 1882 and 1883, practically the only information regarding wheat production, apart from newspaper reports, was obtained at intervals of ten years when the census was taken. More recently the Department of Agriculture at Ottawa has been issuing, through the Census and Statistics Office, official statements of the field crops in which wheat is included. In 1906, under the authority of an act of the Dominion parliament, a census of population and agriculture was taken in Manitoba, Saskatchewan, and Alberta. An exceedingly interesting and valuable report has been issued showing the results of this work. This is the first of a series of similar reports on these three provinces to be made at ten year intervals, in addition to the regular decennial census for the whole Dominion such as was taken during the year 1911. The figures of the provincial governments showing areas and total products vary considerably from those found in the census reports. In general, but not always, the former are larger than the latter. We have here followed rather consistently the various official reports of the federal census office, believing that, on the whole, they are the more nearly correct.

According to the census of 1871, the total area devoted to wheat in Nova Scotia, New Brunswick, Quebec, and Ontario was 1,646,781 acres, and the aggregate yield was only 16,723,873 bushels. At this time the output of the rest of British North America appears to have been of such minor importance that it was not taken into consideration. The real Canadian wheat belt still remained in a state of nature. Ten years later the crop had just about doubled. At the end of another decade, in 1890, the area had increased to 2,723,861 acres and the yield to 42,144,629 bushels. In the whole Northwest (exclusive of Manitoba) the land sown to wheat amounted to only 113,811 acres and the output was but 1,792,409 bushels—about one twenty-fourth of the yield for the whole country.

With the later movement of population into what are now the provinces of Manitoba, Saskatchewan, and Alberta the center of wheat production for the whole Dominion has shifted westward

also, until it is now within the limits of these three provinces. This is shown by the fact that, in 1909, their combined crop was 147,482,000 bushels out of a grand total of 166,744,000 for the whole country. It is thus seen that great changes in the production of this cereal have been brought about during the last twenty or thirty years, and that a discussion of Canadian wheat production to-day must of necessity be centered around the prairie provinces. It seems desirable at first, however, briefly to outline the history and present condition of the industry in the rest of the Dominion.

In the Maritime Provinces the total output has always been relatively small. As a whole, they show a decline both in acreage and in total production, although the yield per acre has increased considerably. In Nova Scotia, only 21,000 acres were sown to wheat in 1910 as compared with nearly twice this area in 1880. The output, however, amounted to 480,000 bushels, while 529,251 bushels were reported for 1880 on the much larger acreage. During the last ten years more attention has been given to wheat culture so that the province now is a little less dependent upon the West for flour than it was ten or a dozen years ago. In New Brunswick, the decline in acreage has been fairly constant; 40,336 acres were cropped in 1880 as compared with 19,500 in 1910. The yield in 1910 was 371,000 bushels against 521,956 thirty years earlier. The figure showing the output in 1910 is less than that of any census year since 1881, with the exception of 1891, when the total crop was 209,809 bushels from 17,306 acres. Prince Edward Island, on the other hand, has been increasing its production slightly. In 1880, the acreage was 41,942, and it has shown no important change in any census year; but in 1910 it had fallen to 30,000 acres. The output has been increasing, 615,000 bushels being reported in 1910 as compared with 546,986 on a much larger area in 1880. The yield in 1900 was 736,679 bushels from 42,318 acres. Practically the whole output of the Maritime Provinces is spring wheat.

In British Columbia also the amount of wheat raised has always been relatively insignificant. The census of 1881 showed an acreage of 7,952, which was doubled ten years later, and still remained about the same at the census of 1901. This census showed a crop of 360,000 bushels, whereas, twenty years earlier, it was only 173,653 bushels.

In Quebec, the decline in acreage has been steady, but the average yield per acre has increased, so that a diminishing area has given a fairly steady output, which does not vary greatly from 2,000,000 bushels. In 1910, 99,400 acres produced 1,827,000 bushels, while, thirty years earlier, an area of 223,176 acres yielded but 2,019,004

bushels. Evidently, there has been considerable improvement in farming methods within the province.

Until about the beginning of the present century Ontario was the principal wheat province of the Dominion; but Manitoba, at first, and Saskatchewan, later, came to occupy this position. Between 1880 and 1900, no serious change either in the acreage or production of Ontario is to be noted, although the tendency was toward a decrease in the area sown to wheat. Over 27,000,000 bushels were taken from 1,930,123 acres in 1880 and nearly 28,500,000 bushels from 1,489,633 acres in 1900. But there has been a noticeable decrease both in acreage and production during the last ten years. In 1910, the area cropped was only 729,500 acres and the yield was 17,805,000 bushels. The decline in acreage in both Quebec and Ontario was contemporaneous with the spread of wheat culture into the prairie provinces. In spite of the adaptability of soil and climatic conditions in Ontario for the growth of this cereal, the output has declined both relatively and absolutely on account of the competition of the West. It pays the Ontario farmer better to follow dairying, fruit-growing, or mixed farming and leave the raising of most of the wheat to his fellow countrymen who are coming into the possession of the real Canadian wheat belt on the western prairies. This statement, with certain limitations, may be applied to practically all the provinces so far considered.

The three northwestern provinces within which the famous Canadian wheat belt is located are Manitoba, Saskatchewan, and Alberta. With a combined area of 369,869,898 acres, they are more than four and three-fourths times the size of the United Kingdom, and more extensive by nearly 3,500,000 acres than the combined areas of the United Kingdom, Germany, France, Belgium, Holland, and Denmark.* The largest province is Alberta, which contains 162,265,600 acres—nearly two million more than Saskatchewan. Or, to make still other comparisons, Alberta is about twice as large as Great Britain and Ireland, and much larger than either Germany or France. Manitoba is relatively small, being less than one-third the size of either of the other provinces.

On the whole, the climate is well adapted to wheat culture. Of course, there are various drawbacks, such as hail-storms, frosts, etc., which, at times, are the causes of loss to the farmers, though they rarely bring about a complete failure of the crops. It is now possible also, to procure insurance against all such losses. An insurance policy, for example, may be purchased for a moderate sum

* See *Census of Population and Agriculture of the Northwest Provinces*, 1906, p. xxii.

which will guarantee indemnity for losses from hailstorms. Then, dangers of frosts occurring before harvest time are constantly being minimized by the breeding and selection of hardy varieties of wheat for seed. The soil throughout large areas is unexcelled for wheat raising. Broadly considered, there are large portions of Central Canada whose soil is a rich black loam, and whose sub-soil is clay which is capable of retaining considerable moisture.

The estimates as to the amount of land available for wheat raising vary from over 170,000,000 to less than 50,000,000 acres. The latter, however, does not take into consideration some 47,000,000 acres which are reported to be excellently adapted for mixed farming, of which the raising of wheat would probably be an important activity. Nearly two-thirds of the enormous province of Saskatchewan is within the Canadian wheat belt, to say nothing of the large areas of Manitoba and Alberta which already have produced millions of bushels annually, and of still larger areas of excellent wheat lands which are merely waiting for settlers. But, with the data available at present, it is as futile to attempt to figure out with exactness the wheat area in this region as it would be to predict the total yield at some more or less remote date. What we do know, however, is that, stretching through the hearts of Manitoba, Saskatchewan, and Alberta for several hundred miles, is a wheat belt of some 200 miles or more in width which, judging from the results already obtained, is not excelled for wheat raising by any other similar area. For many years to come, there need be no particular concern on the part of intending settlers as to the exact area of this region, for there is still plenty of virgin soil. Less than 10,000,000 acres have been planted in any single year, and this is but a small proportion of the available area, according to conservative estimates. Lying entirely outside of the wheat belt proper, there are millions of acres which undoubtedly can be cultivated with profit by wheat farmers and by others who choose to carry on mixed farming. Until recently, the idea of utilizing these outlying lands had scarcely occurred to anyone, it being taken for granted that agriculture was forbidden to these regions on account of a too rigorous climate. The error of such preconceived notions is becoming apparent as the knowledge of the country increases.

Manitoba, being the easternmost of the three wheat provinces, was naturally the first to have its rich lands exploited. The movement did not begin, however, until the last quarter of the nineteenth century. We have seen that at the census of 1871 no wheat was reported west of Ontario. At that time the population of Manitoba

was only about 25,000, of which nearly one-half were Indians. Ten years later it had increased to upwards of 62,000 and about a million bushels of wheat were being raised. At the close of the next decade, the population numbered 152,000, and the amount of wheat harvested, according to the census, was about 16,000,000 bushels—the largest crop of any year to that date. The closing decade of the century saw no striking changes either in acreage or production, although there was an increase in both. The wheat crops of the Northwest were a partial failure in 1900, owing to a long-continued drought throughout the growing months, so that in Manitoba only 18,353,000 bushels were obtained from 1,965,000 acres. Since the opening of the present century, however, the progress has been rapid. The acreage has increased steadily, until it passed the three million mark in 1910, and the annual yield, though subject to considerable variation, has amounted to nearly 55,000,000 bushels. Practically the entire output is spring wheat; in both Manitoba and Saskatchewan, the growth of fall varieties has, as yet, hardly passed the experimental stages, but the results obtained are promising.

Although the development of wheat production in Manitoba has been rapid, especially within recent years, it has been relatively slow as compared with the progress made in the neighboring province of Saskatchewan. As late as 1880, so few settlers had gone west of Manitoba that, in the entire region now included within Saskatchewan and Alberta, less than 120,000 bushels of wheat were being raised. But it was inevitable that the settlement and exploitation of their excellent lands should soon begin. Progress was slow, however, until the very close of the Nineteenth century, when, in what is now the province of Saskatchewan, some 487,000 acres were sown to wheat and about 4,306,000 bushels were harvested. Since then, the figures showing both the acreage and output have increased at a phenomenal rate, until, in 1910, the former had risen to 4,848,000 and the latter to 81,139,000. The area sown to wheat in the present year (1911) is even greater, for it embraces 5,715,900 acres and there are prospects of a good harvest. A similar enormous increase in output of other agricultural products also has taken place due, as in the case of wheat, to the very rapid settlement of the province. At the present day, Saskatchewan occupies the first place among the provinces of Canada in wheat production, having succeeded to Manitoba in 1909.

Alberta, being the farthest west of the prairie provinces, was, quite naturally, the last to be affected by the tide of immigration. This is one of the reasons why the portion of the great Canadian

wheat belt which is contained within this province has, as yet, contributed but little toward the total wheat crop of the Dominion. Another reason which should not be overlooked is that conditions here are especially favorable for ranching. In the West, horse ranching has been confined almost solely to Alberta, and cattle ranching also is practiced even more than in Saskatchewan, the next important seat of the industry. In the case of all farm animals excepting the pig, more have been reported per farm from Alberta than from either of the other prairie provinces—an indication of the greater adaptability of the former to the rearing of live stock. With reference to the raising of wheat, the climatic conditions are favorable to the growth of both spring and fall varieties, although the former have always figured most conspicuously in the total output. Wheat-raising in Alberta for commercial purposes may be said to date back for only little more than ten years. In 1900, only 43,000 acres were cropped and the total output was under 800,000 bushels. Since then the development has been slow but steady. At present about 650,000 acres are devoted to the cereal annually; the largest crop of any single year was harvested in 1909, amounting to 9,579,000 bushels. This was greater by nearly one-third than that of any other year up to the present time, but it is small as compared with Saskatchewan's crop of 85,197,000 bushels or Manitoba's 52,706,000 bushels in the same year.

These facts show the westward march of wheat production in Canada, and the rapid strides which the Northwest, as a whole, has been making with respect to wheat raising, especially during the last ten years. To summarize the situation exactly as it has been, for the whole region as well as for the separate provinces, the following table, compiled from official sources, is added:

COMPARATIVE AREAS AND YIELDS OF WHEAT IN THE NORTHWEST PROVINCES FOR THE YEARS MENTIONED.

WHEAT	*1911*	*1910*	*1909*	*1908*	*1906*	*1900*
Northwest Provinces:						
Acres	9,592,900	8,395,400	6,878,000	5,624,000	5,062,493	2,495,466
Bushels	.....	128,891,000	147,482,000	91,853,000	110,586,824	23,456,859
Manitoba:						
Acres	3,223,900	3,014,400	2,808,000	2,957,000	2,721,079	1,965,193
Bushels	.....	41,159,000	52,706,000	50,269,000	54,472,198	18,352,929
Saskatchewan:						
Acres	5,715,900	4,848,000	3,685,000	2,396,000	2,117,484	487,170
Bushels	.....	81,139,000	85,197,000	34,742,000	50,182,359	4,306,091
Alberta:						
Acres	653,100	533,000	385,000	271,000	223,930	43,103
Bushels	.....	6,593,000	9,579,000	6,842,000	5,932,267	797,839

In spite of the rapid development of the wheat-raising industry, it is to be remembered that Canada's maximum yield is relatively small when brought into comparison with that of the United States. The 166,744,000 bushels of 1909 is not such an enormous quantity after all when balanced against the 713,000,000 bushels of the latter country in the same year. Besides, so much is heard nowadays about the great Canadian wheat fields and their wonderful harvests that one is likely to forget that as early as 1867 the United States was producing a wheat crop larger than the average Canadian crop of the present day. But that which fans the enthusiasm of the people of the western provinces as well as that of prospective settlers is not so much what has already been accomplished as the bright prospects for the future. On both sides of the international boundary line it is just beginning to be realized that a large, if not the best, part of the natural wheat area of this continent lies to the northward of the forty-ninth parallel of latitude. The Canadians are justly proud of the results already achieved in the evolution of their wheat industry; but, though the prospects of expansion during the next decades are full of promise, the time by no means is in sight as yet when their ambition to lead the world in the output of this cereal will become a reality.

LATEST HIMALAYAN EXPLORATIONS OF THE WORKMANS*

Dr. W. Hunter Workman and Mrs. F. Bullock Workman have recently returned to India from their seventh Himalayan expedition. They have explored the region, much of it virgin ground, south of the Baltoro glacier in Baltistan lying between that glacier and the Shyok and Saltoro valleys, and extending from a line some distance west of the meridian of Masherbrum to the Kondus-Siachen watershed on the east; embracing the Kondus and Hushe river-basins and the glaciers tributary to them. The whole region is covered with giant mountains, 21,000 to over 25,000 feet high, enclosing between their steep and, in places, perpendicular walls, large, sharply descending glaciers. Seven glaciers were explored, of which

* Dr. W. Hunter Workman has sent to the *Bulletin* the following summary of the explorations of Mrs. Workman and himself, during the past season, in the region of great glaciers and lofty summits embraced between 34°–36° N. Lat. and 76°–78° E. Long.

four were mapped. No traces of three passes reputed to lead from this region to the Baltoro could be found, all glacier-reservoirs being enclosed by abrupt, unscalable rock-walls in which no openings exist, and the upper portion of most of the glaciers are of such steep incline and so crevassed and broken into séracs as to be impassable.

After the exploration of this district was concluded, the Bilapho glacier still farther east, some 20 miles long, the surface of which is greatly broken and moraine-covered, was ascended to the ice-covered pass at its head, about 18,550 feet above sea-level as determined by boiling point readings compared with simultaneous ones at the lower Government Meteorological Station at Skardo. From this pass a broad glacier about fifteen miles long was descended, leading to the great Siachen glacier discovered in 1909 by Dr. T. G. Longstaff, who with two companions and coolies descended by the same route to its edge, where they remained one day and then retraced their steps over the Bilapho Pass, neither ascending nor descending the Siachen from the point where they reached it.

The expedition on reaching the Siachen at a point about 16,000 feet in altitude and some twenty miles from its source, established a base camp on a projecting spur, from which further exploration was carried out.

The Siachen glacier, the largest mountain glacier yet discovered in Asia, has a probable length of fifty miles, if not more. Its upper half has a very complicated topography, drains a great area, and is fed by seven large branches nearly as wide as the main stream. Two of the latter were ascended, the first to a point at its source, fifteen miles above its junction with the main glacier on the flank of the giant-peak K3 at an altitude of 20,000 feet, above which a perpendicular rock-precipice rises to the summit 24,415 feet in height; the second, after a distance of twenty-five miles, opening into an extensive ice-plateau lying at and above an altitude of 19,000 feet, which stretches out ten to fifteen miles farther to a snow pass descending to the east towards the Karakoram Pass. Besides these large branches, innumerable smaller ones descend to and feed the glaciers from the mountains rising above it.

The highest mountains lie to the west of the glacier on the border of the region earlier explored by the expedition and far to the north, where the Siachen approaches the head of the Baltoro, many of them rising as separate peaks or massifs of great size. One of the most impressive of these is the peak K3, with two summits, of 25,210 and 25,415 feet respectively, marked on the Survey map as two

separate peaks, which dominates not only the Siachen but also the Dong Dong and the upper end of the Bilapho glacier.

Three elevations on the northeastern wall of the Siachen, one of which (it is not certain from his description, map, and photos, which) was named by Dr. Longstaff, Teram Kangri, were triangulated with theodolite by Dr. Calciati. His final figures are not yet rendered, but preliminary calculations indicate that the altitude of the highest of these will not vary far from 24,000 feet, quite a difference from the altitude assigned by Dr. Longstaff to Teram Kangri of over 30,000 feet as worked out by the Indian Survey from some angles taken by him with a clinometer from three points, which impossible height Dr. Longstaff reduced to 27,610 feet. A triangulation of the same three elevations has been made the past season from four trigonometrical stations south of the Siachen, with results not very different from those obtained by Dr. Calciati. So far as known, the exact figures of the Survey measurement have not been published, but Teram Kangri can no longer be counted among the Himalayan peaks of the first class.

The expedition reached the Siachen on Aug. 19, rather late in the season for the exploration of a large glacier, especially when the only avenue of retreat in the case of bad weather was over a high and, in that case, dangerous snow-pass. As the weather proved favorable, several days together being cloudless, a month was spent in a first exploration of a large portion of the upper half of this most interesting giant among glaciers, although the immediate examination of its ultimate sources extending high up into the region of eternal snows had to be omitted on account of the shortening days and long nights. For the same reason the cold became rather trying, especially when the wind was strong. On several occasions a temperature of 5° F. was recorded at 16,000 feet.

Among other high points attained was the summit of a sharp peak of 21,000 feet, commanding an extended view of 35 miles of the Siachen as well as of its wonderful entourage of mountains. During the month spent on the glacier all camps were made at altitudes of from 16,000 to over 19,000 feet.

Many interesting observations were made, not only of a geographical and physiographical nature, but also regarding the structure and surface-formations of glaciers, of which the Siachen furnishes examples striking to an unusual degree. Some of these observations relate to phenomena not yet, so far as known, brought forward. A large collection of photographs, panoramas, and telephotographs was secured.

PRELIMINARY REPORT OF THE YALE PERUVIAN EXPEDITION

BY

PROFESSOR HIRAM BINGHAM, DIRECTOR

The Peruvian Expedition, as approved by the Yale Corporation, consisted of seven men: Professor Hiram Bingham, Director, Professor Isaiah Bowman, Geologist-Geographer, Professor H. W. Foote, Collector-Naturalist, Dr. Wm. G. Erving, Surgeon, Mr. Kai Hendriksen, Topographer, Mr. H. L. Tucker, Archæological Engineer, and Mr. P. B. Lanius, Assistant.

We landed at Mollendo, the chief seaport of southern Peru, in June, 1911, and went at once to Cuzco, the old Inca capital. The first field of operations was the Urubamba River and its affluents, including the hitherto unknown Rio Pampaconas. The second was a cross-section from the head of canoe navigation on the Urubamba south over the Andes to the Pacific Ocean. The third was the neighborhood of Mount Coropuna and Lake Parinacochas. For this last, Arequipa was used as a base. The field work occupied five months. The expedition was divided into three parties to do archæological, geological and topographical exploration.

The Peruvian Government, acting on the initiative of President Leguia, gave the expedition free entry for all their supplies and loaned the services of several soldiers and non-commissioned officers. Through the courtesy of President Taft, the United States Coast and Geodetic Survey and the Geological Survey loaned the necessary topographical instruments, and the Army a complete medical equipment, including typhoid vaccine.

The topographical work was in charge of Mr. Kai Hendriksen, formerly of the University of Copenhagen, and later of the United Coast and Geodetic Survey on the Canadian boundary.

Mr. Hendriksen reports that he made seventeen topographic maps, took fifteen observations for latitude and twenty-seven observations for longitude and made several plans of ruins. The following maps are the results of his surveys:

"One detailed topographic map covering 50 square miles (scale 1:45,000; relief in contours, interval 100 feet), showing characteristic physiography of Cen-

tral Andes, west of Cuzco. Astronomical basis: One observation for latitude, two observations for azimuth and longitude.

One detailed topographic map covering region 1½ miles long, ½ mile wide (scale 1 in.=300 feet [1:3,600]; contour interval, 20 feet, in places, 5 feet), of *quebrada* near Cuzco, where interesting bones and ash-deposits were found. The map shows bench marks to which photographs and discoveries were tied.

One detailed topographic map covering region 2 miles long, 1 mile wide (scale 1:9,000; contour interval, 20 feet), of Cuzco and vicinity. Shows the above-mentioned *quebrada* and the famous ruins near Cuzco.

One topographic map (standard*) (covering region about 30 miles long, 5 to 10 miles wide) of the Urubamba valley from Piscocucho to Mandor Pampa. The map shows the position of most of the ruins found in the Urubamba valley. Jungle in the greater part of the valley. Astronomical basis: One observation for latitude, two observations for azimuth and longitude.

One topographic map (standard) (covering region about 30 miles long, about 5 miles wide) of the Vilcabamba valley from Chaullai to Vilcabamba. Jungle in the lower part of the valley. Astronomical basis: One observation for latitude, two observations for azimuth and longitude.

One route-survey, with astronomical positions, about 60 miles long, showing form-lines of about 200 feet difference in elevation. The survey and return was made in ten days on foot from Vilcabamba to Esperitu Bampa, where Inca ruins were found. The trail followed was very narrow through heavy jungle. Much rain. No accurate survey could be made. Directions by prismatic compass, distance by time and pedometer, elevation by aneroid. Astronomical control: Five observations for latitude, eleven observations for azimuth and longitude.

Quick route-survey from Vilcabamba to Abancay (by Prof. I. Bowman). Astronomical basis: Two observations for latitude.

Ten topographic maps (standard), covering region 250 miles long, 5 to 20 miles wide, 40 working days. Cross-section over the Andes from Abencay to the Pacific Coast (Camana). (The map of Coropuna is a part of this map.) Astronomical control: Fifty observations for latitude, ten observations for azimuth and longitude.

One detailed topographic map (scale 1:45,000; contour interval, 100 feet), covering thirty square miles of pass between Lambrama and Chuquibambilla. Shows characteristic glacial topography.

Three large-scale plans of the ruins of Aquente and Torontoy. Measured by tape and stadia, with accurate measurements of each building.

Several accurate measurements of smaller ruins.

All the standard topographic maps are done by exact methods of survey: distances by micrometer screw combined with triangulation, elevations by vertical angle. The distances are determined with an accuracy of 50 to 100 feet, elevations with an accuracy of about 30 feet. The more detailed topographic maps were made by the same method. The two detailed topographic maps on a very large scale, near Cuzco, were made by stadia and vertical angles.

A bathymetric and topographic survey was made of Lake Parinacochas, 11,500 feet above the sea. A folding boat was successfully

* The standard maps of the expedition are: scale 1:90,000; contour interval 200 feet.

carried from this country. According to the story given us by the natives, Parinacochas was navigated for the first time. We found its length to be about 17 miles and its width 6 miles. The greatest depth is not over six feet. At the time of our visit in the dry season it had somewhat shrunk so that we failed to find any depth over four feet six inches. A sample of the water was brought home to be analyzed. On the shores of the lake were found many primitive ruins indicating the former presence of a large population.

Mount Coropuna was successfully climbed by the Director and Mr. H. L. Tucker, and later was triangulated by Mr. Hendriksen. A comparison between the mercurial barometer taken to the top and one read simultaneously in Arequipa, 100 miles away, gave an altitude of 21,640 feet. Mr. Hendriksen's careful survey and triangulation of the mountain from its vicinity to the sea coast raised this estimate to 21,703, with a mean error of 35 feet. The altitude given to Coropuna on the map of Peru by the Royal Geographical Society, 22,799 feet, is thus seen to be more than 1,000 feet too high, and Coropuna, instead of being the highest mountain in America, probably only occupies fourth or fifth place.

The geological and geographical work was in charge of Professor Isaiah Bowman, who makes the following report of his results:

"(1) Geological map across the Andine Cordillera from the mouth of the Timpia southward along the 73d meridian to Camaná on the coast.

(2) Physiographic interpretation of the belt of country traversed.

(3) Meteorological observations along the line of traverse, including notes on wind, clouds, temperature, humidity, etc., and a set of about fifteen daily temperature curves for typical stations.

(4) Notes on the anthropogeography of the natural regions which were crossed, including the relation of the people to the physiography and geology; also trade routes and movements, products, systems of land tenure, rotation of crops on artificial terraces, the rubber industry, and other data of economic geography.

(5) In further explanation of (1) and (2):

(a) Collection of fossils (Devonian, Carboniferous, Cretaceous, and Tertiary, chiefly) from six type localities.

(b) Interpretation of the structure section across the cordillera.

(c) Interpretation of the geology of the Cuzco basin, including the finding of Tertiary fossils and the origin of the famous "Rodadero" wrongly supposed for many years to have been glaciated.

(d) Determination of the level of perpetual snow, and the limits of past glaciation—of special importance in connection with the problem of decreasing level of snow-line towards the equator.

(e) Glacial forms and their interpretation: a study of the effects of glacial erosion in valleys from which the ice of glacial times has been withdrawn. The results of these studies bear out in a striking way the conclusion that ice is a

powerful agent of denudation. Special attention was given to the glacial alluvium about Cuzco in order to determine the importance of human remains found therein.

(f) Clear geologic and physiographic evidence of past climatic changes beyond the limits of glaciation, especially in the deep valleys of the Cordillera and in the desert of the coast region.

(g) Evidence that the great coastal terraces have had a complex history, including a submergence in the Tertiary and a later stripping still in progress.

(h) Discovery that the great Tertiary cycle of erosion ending in the formation of well-graded mature slopes affected this region as well as the region farther south studied in the Yale South American Expedition of 1907.

(i) A study of the relation of the forests of the region to water supply slope exposure, and soils.

(j) A set of observations on the temperature of water and air along the Peruvian coast in relation to (1) the counter current sometimes visible, and (2) to the more abundant showers on the coast hills, a feature especially important during the past season.

(k) Topographic sketch map of the Urubamba valley between Rosalina and Pongo de Mainique, indicating the form of the land by contours and showing the positions of a large number of rapids and whirlpools.

(l) Route map across the Cordillera Vilcabamba indicating geologic boundaries and position and relation of the principal glacial forms.

(m) Pleistocene history of the Lake Titicaca basin.

The natural history collections were in charge of Professor H. W. Foote, who makes the following report:

"On the advice of our biological department, collecting was limited mainly to insects and non-flowering plants, including mosses and liver-worts. This was done partly because it was impossible for one man to collect effectively in many different lines and partly because the birds, animals, and flowering plants of Peru are fairly well known, while the orders which were collected were not.

Collecting was chiefly carried on along the valleys of the Urubamba, Vilcabamba, and Pampaconas Rivers, a distance of perhaps 250 miles, from an altitude of over 12,000 feet (at Vilcabamba) to 3,000 feet (Santa Ana). A fair collection was also made about Cuzco. It was the dry season and winter, when insects are not so plentiful as in the wet season when it is warmer. Nevertheless, approximately 3,000 specimens of plants and insects were obtained, besides several hundred land shells.

Little or no collecting has been done before in the districts visited and it is believed that the collection will add materially to our knowledge of geographical distribution. It is also probable that some new species have been obtained. Arrangements have been nearly completed to have the collections investigated by specialists who will

publish their reports later. Ultimately, it is hoped to deposit most of the collecton in Peabody Museum."

A few archæological discoveries were made by the Director. Among them are the ruins of a number of Inca or pre-Inca cities, including: (1) Macchu Pichu, a city probably built by the "megalithic race" who preceded the Incas. The ruins are on an almost inaccessible ridge, 2,000 feet above the Urubamba River. They are of great beauty and magnificence and include palaces, baths, temples and about 150 houses. Carefully cut blocks of white granite, some of them twelve feet long, were used in the construction of the walls. The city was surveyed by Messrs. Tucker and Lanius.

(2) The temple of Yuracrumiu, the centre of the Inca religious cult after the fall of Cuzco, containing a carved monolith 185 feet in circumference.

(3) Vitcos, the palace and capital of Manco Capac, the last Inca, probably built after his retreat from before Pizarro's conquering army.

(4) Vilcapampa, a purely Inca town, now completely buried in the dense jungle of the Rio Pampaconas, but containing characteristic Inca pottery, and bronze implements.

(5) A number of other primitive towns in the coastal desert provinces, two of which were marked by volcanic boulders covered with pictographs including drawings of jaguars, llamas, and dancing men.

Near Cuzco a wall was discovered, probably over 100 feet long, partially exposed by recent erosion. Excavation revealed the fact that it was buried beneath six feet of gravel deposited on both sides and on top of it by the action of water. The wall was about four feet in thickness, faced with carefully cut polygonal stones on both sides, the middle being filled in with rubble. As the wall resembles some of the oldest and best-known walls in Cuzco and here was found to be covered by compact gravels, the age of this type of wall will depend largely on the geological evidence regarding the gravel. If this gravel should prove to have been deposited in glacial times it would revise the prevailing notions. The natives generally consider it to be Inca; some scholars regard it as pre-Inca. The geological evidence appears to be decidedly in favor of the latter view.

Human bones were found in the same valley, embedded under seventy-five feet of gravel, interstratified with the gravel beds and with the bones of several lower animals. They were excavated by the Director and Professor Bowman in the presence of Professor Foote, who photographed the bones in position.

Professor Bowman made a detailed study of the geology of the surrounding region and makes the following preliminary report:

"The geographic and geologic study of the bones found near Cuzco indicated that they were contemporaneous with the compact gravels in which they were embedded. They were disposed in the form of a lens about 10 feet long and 6 inches thick. From (1) their disposition with respect to each other (they were jumbled and essentially flat), (2) their relations with the bedding planes (some of which passed directly through the bone deposit), and (3) their worn condition (the finer details are absent), it is concluded that they were interstratified with the gravel beds. The age of the beds thus becomes the determining fact in the interpretation.

"From a detailed study of the geology of the upper Cuzco basin with special reference to glacial forms, it is concluded (1) that the beds belong to the Pleistocene series, (2) that the bones were deposited during a period of pronounced alluviation, and (3) that since the deposition of the bones at least 75 feet of gravel were deposited over them and later partly eroded, an erosion that is still in progress and to whose activity we owe the exposure.

"It should be remembered that while compelled to refer the gravel beds of this locality to the Pleistocene series I have yet to determine their place in that series. When this is done the antiquity of the vertebrate remains may be more safely approximated than now. A provisional estimate would hardly be less than 10,000 years; it could not exceed the maximum glaciation of the last glacial period generally estimated at 75,000 years."

The bones were soaked in melted vaseline, packed in cotton-batting and brought safely to New Haven, where they have been examined by Dr. George F. Eaton, curator of osteology in the Peabody Museum of Yale University. He finds that the fragments represent sixteen distinct bones, including a fragment of a human skull, two imperfect ribs, fragments of a pelvis and femura of at least three individuals. As there are fragments of only eight human bones, it is impossible to say much about the individuals whom they represent. Of the physical characteristics of the one represented by a femur and an associated pelvis Dr. Eaton reports that the following logical inferences may be drawn: "We may reasonably suppose him to have been a remarkably thickset and powerful man about 5 feet and 4 inches (1.625 m.) in height. As his skeletal characters are not sufficiently primitive to differentiate him specifically from *Homo sapiens,* he should be provisionally referred to that species.

Such a course will also comply with your request that the identification of this material should be made without regard to any purely geological indications of age."

Among the eight other fragmentary bones, is a much battered shaft of the left tibia "from the skeleton of a wolf or wolf-like dog." There is also the "cannon bone" of the left hind leg of a bovine animal, together with a fragment of the right radius and a fragment of the first right thoracic rib. While the exact specific identification of the three last named specimens must rest largely on the determination of their geological age, there is no doubt, says Dr. Eaton, that they are either from the Bison, *Bos americanus,* or from one of the closely related species. The remainder of the collection comprises four more or less fragmentary bones that "are confidently referred to *Lama guanacus,* the Guevaco, the feral species from which the domestic breeds of the Llama and Alpaca are supposed to be derived." If these bones do represent the bison, it is, I believe, the first instance from South America.

Although the bones belong, possibly without exception, to the present day fauna of the new world, the geological evidence points to the possibility of the remains being of glacial or inter-glacial time. Further examination of the region where these bones were found is needed before we shall be able to speak more definitely about their age. There have been several reports from placer gold mines in the central Andes of arrow heads and bones having been washed out of what the mining engineers supposed was glacial gravel. But direct evidence for glacial man in South America is so unreliable that reputed discoveries should not be accepted without the utmost caution.

The bones brought home by the expedition will be presented to the Peabody Museum of Yale University, together with photographs taken by Professor Foote. It seems to me quite possible that the bones and the before-mentioned wall will be found to belong to the same geological period, whatever that may be.

In conclusion, it should be remembered that our work was largely reconnaissance exploration. We hope to send out other expeditions to make thorough examination of the more important discoveries.

COMMENT ON COLONEL CLOSE'S ADDRESS ON THE PURPOSE AND POSITION OF GEOGRAPHY

BY

MARTHA KRUG GENTHE, PH.D.

In his presidential address to the geographical section of the British Association on "The Purpose and Position of Geography," which has been published in several geographical periodicals, including this *Bulletin* (Vol. 43, 1911, No. 10, pp. 740-753), Colonel Close has come to the conclusion that geography is not "a unit of science," at least not "in the sense in which geology, astronomy, or chemistry are units," and he substantiates this assertion mainly by an examination of the original contributions to the *Geographical Journal* during the last five years.

When Colonel Close says that the work of the leading British geographical society is "mainly an affair of exploration and surveys" and that the authors who submit their work to it "in so doing appeal rather to the public at large than to men of their own special sciences," because that society serves only "as a popularizing medium," we must leave to him the full responsibility for such a statement. Whatever its validity, however, in so far as it concerns geography in England, it does not follow that conditions must be the same all over the world. Such a sweeping generalization would not hold in any science, and does not in geography.

In order to make possible a fair criticism of the author's statements I shall not at first take exception to his method, but will apply that method to test corresponding conditions on the Continent and in the United States. Choosing for comparison the last five volumes of the *Zeitschrift der Gesellschaft für Erdkunde zu Berlin*, for instance, I find that, of 107 original papers, 27, or 25.2 per cent., deal with travel and exploration, and 20, or 18.7 per cent., with general physical geography. The complete list for the respective sections, following Colonel Close's numeration, is as follows (the figures in parentheses indicating the percentages for the *Geographical Journal*):

CLASSIFICATION OF ORIGINAL PAPERS IN THE ZEITSCHRIFT DER GESELLSCHAFT FÜR ERDKUNDE ZU BERLIN, 1906-1910.

SECTION	SUBJECT	PERCENTAGE	
1	Mathematical and Cartographical Geography	12.0	(3)
2	General Physical Geography	18.7	(10)
3	Vulcanology and Seismology	7.4	(5)

SECTION	SUBJECT	PERCENTAGE	
4	Glaciers	6.7	(3)
5	Hydrography (Potamography and Limnology)	2.8	(5)
6	Oceanography	3.7	(3)
7	Meteorology and Climatology. Terrestrial Magnetism	3.7	(3)
8	Biological Geography	0.9	(1)
9	Anthropology and Ethnography	3.7	(3)
10	Economic and Social Geography	3.7	(7)
11	Explorations	25.2	(57)
[12]	Systematic Regional Geography	11.2	—

A twelfth section has been added to the original eleven sections of Colonel Close's classification, viz.: systematic regional geography [*Länderkunde*]. (It is illuminating to note in connection with the validity as a criterion of the classificaton adopted by geographical congresses, to be discussed later, that this, the ultimate goal of modern scientific geography, is not represented in Colonel Close's list). From the above table it is obvious that travel and exploration hold much less commanding a position in the work of the Berlin society than they do in that of the Royal Geographical Society.

The difference is even more marked when we classify these papers according to whether they were presented originally as addresses at the meetings of the society or as direct contributions to its journal. A separate calculation of the percentages for each group resulted in the following table:

DIVISION OF ABOVE PAPERS INTO ADDRESSES AND DIRECT CONTRIBUTIONS

SECTION	ADDRESSES	DIRECT CONTRIBUTIONS
1	4%	19.3%
2	22	16.0
3	2	12.3
4	2	10.5
5	4	1.7
6	4	3.5
7	0	7.0
8	0	1.7
9	2	5.2
10	6	1.7
11	40	12.3
[12]	14	8.8

We see from these figures that in the addresses the percentage of explorations exceeds that of the other groups almost, though not quite, as much as it does in Colonel Close's list, while the direct contributions show a much more even distribution of the individual subject. We shall later inquire into the meaning of this difference; suffice it now to state the fact.

In order to obtain a broader basis for the conclusions which might be derived from these figures, I collected additional material from leading geographical periodicals of Germany, France and the United States. Instead of computing, however, the contents of five years of one journal, I took one year each of five journals whose scientific standard is universally recognized: *Petermanns Mitteilungen, Geographische Zeitschrift, Annales de Géographie, La Géographie, Bulletin of the American Geographical Society.* The respective figures, arranged in accordance with Colonel Close's scheme, are as follows:

CLASSIFICATION OF ORIGINAL PAPERS IN ONE YEAR EACH OF FIVE GEOGRAPHICAL PERIODICALS.

SUBJECT.	*Petermanns Mitteilungen.*		*Geographische Zeitschrift.*		*Annales de Géographie.*	
	NUMBER OF PAPERS.	PER-CENTAGE.	NUMBER OF PAPERS.	PER-CENTAGE.	NUMBER OF PAPERS.	PER-CENTAGE.
Mathematical and Cartographical Geography	7	17.0	3	9.0	2	10.5
General Physical Geography	5	11.9	5	15.1	6	31.5
Vulcanology and Seismology	1	2.4	2	6.0	0	0.0
Glaciers	0	0.0	4	12.1	4	21.0
Hydrography (Potamography and Limnology)	2	4.8	1	3.0	2	10.5
Oceanography	0	0.0	0	0.0	0	0.0
Meteorology and Climatology. Terrestrial Magnetism	0	0.0	5	15.1	1	5.2
Biological Geography	3	7.0	1	3.0	0	0.0
Anthropology and Ethnography	4	9.4	0	0.0	1	5.2
Economic and Social Geography	7	17.0	5	15.1	2	10.5
Explorations	11	26.1	2	6.0	0	0.0
Systematic Regional Geography	2	4.8	5	15.1	1	5.2
Totals	42		33		19	

SUBJECT.	*La Géographie.*		*Bull. Amer. Geogr. Soc.*		TOTAL NUMBER OF PAPERS.	AVERAGE PERCENTAGE.
	NUMBER OF PAPERS.	PER-CENTAGE.	NUMBER OF PAPERS.	PER-CENTAGE.		
Mathematical and Cartographical Geography	3	9.7	3	7.0	18	10.6
General Physical Geography	5	16.1	7	16.3	28	16.6
Vulcanology and Seismology	1	3.2	1	2.3	5	3.0
Glaciers	0	0.0	3	7.0	11	6.5
Hydrography (Potamography and Limnology)	2	6.4	0	0.0	7	4.5
Oceanography	0	0.0	1	2.3	1	0.6
Meteorology and Climatology. Terrestrial Magnetism	0	0.0	0	0.0	6	3.5
Biological Geography	2	6.4	0	0.0	6	3.5
Anthropology and Ethnography	2	6.4	6	14.0	13	7.7
Economic and Social Geography	4	12.9	11	25.8	20	17.2
Explorations	7	22.6	10	23.2	30	18.0
Systematic Regional Geography	5	16.1	1	2.3	14	8.3
Totals	31		43		168	

"The main conclusion" here, too, "is obvious enough": for the leading geographical periodicals of Germany, France and the United States, geography is *not* mainly an affair of exploration and surveys, although the list includes the classical organ of the great explorers of the second half of the nineteenth century, *Petermanns Mitteilungen*. Explorations alone account for no more than 18 per cent. of their contents on the average, with a maximum of but 26 per cent. The next largest sections are: economic and social geography, with an average of 17.2 per cent. and a maximum of 25.8 per cent.; general physical geography, with an average of 16.6 per cent. and a maximum of 31.5 per cent.; and anthropology and ethnography, with an average of 7.7 per cent. and a maximum of 14.0 per cent. In other words, mathematical and cartographical geography, general physical geography, anthropology and ethnography, economic and social geography, explorations and systematic regional geography account for 78 per cent. of the contents of these five periodicals, allowing no more than 22 per cent. for the six remaining sections combined.

There is still another test which ought not to be omitted in determining the character of geography as a science: it is the place which it occupies as a subject in the curricula of the universities. The number of courses and of hours assigned to each of the above-mentioned sections will clearly indicate what geography is considered to be by the geographers themselves who claim to be scientists and what importance they attribute to the respective sections. Unfortunately, I have only been able to obtain the announcements of the courses given in German in the universities of Germany, Switzerland and Austria. But, inasmuch as these figures are used only to supplement those above, not for independent conclusions, and as Germany has been the classical country of scientific geography from its very beginnings, this one example may be considered adequate. There were announced for the winter semester of 1911-12 a total of 91 courses in geography, amounting together to 220 hours a week*.

The following table represents the proportion of courses and time devoted to the respective sections:

ANALYSIS, ACCORDING TO SUBJECT, OF GEOGRAPHICAL COURSES OFFERED IN GERMAN IN THE UNIVERSITIES OF GERMANY, AUSTRIA AND SWITZERLAND DURING THE WINTER SEMESTER OF 1911-12.

SUBJECT	COURSES	TIME
Mathematical and Cartographical Geography	14.4%	10.0%
General Physical Geography	17.7	25.0
Vulcanology and Seismology	0.5	0.2
Glaciers	4.4	2.7
Hydrography (Potamography and Limnology)	0.0	0.0
Oceanography	3.3	4.1

* The actual number of hours and courses is even larger because the "colloquia" and "Übungen," the hours and subjects of which are announced later in the year, could not be included for this reason.

SUBJECT	COURSES	TIME
Meteorology and Climatology; Terrestrial Magnetism....	1.1%	0.9%
Biological Geography	2.2	2.2
Anthropology and Ethnography	7.7	7.7
Economic and Social Geography	12.4	9.5
Explorations	4.4	4.5
Systematic Regional Geography	32.2	33.2

According to these figures, the men who, in Germany, consider geography a science are so far from identifying its contents with exploration and mapping that they assign to these two sections but 18.8 per cent. of their courses and 14.5 per cent. of their time, while to systematic regional geography and general physical geography together, they assign 50 per cent. of their courses and 58 per cent. of their time. To the latter two subjects, in conjunction with anthropo-ethnological and social-economic geography, they devote 70 per cent. of their courses and 75 per cent. of their time, leaving but 12 per cent. of the courses and 10 per cent. of the time to the work of the six remaining sections combined.

It cannot be denied that Colonel Close's estimate of geography differs considerably from that of Continental and American geographers. If in spite of the facts given here he could arrive at the conclusions expressed in his address, the discrepancy must be due to his method of inquiry, and it is his method which we must now examine.

In his evaluation of the purpose and position of geography he was guided by a laudable desire to be impartial. For this reason he refrained from establishing any personal standard of merit and adopted instead what he believed to be the accepted standard of geographers themselves. This policy might have supplied him, indeed, with an excellent foundation if he had not been strangely unfortunate in the choice of his standard. In supposing the classification of the Geneva Congress to represent the various aspects of geography and their relative importance, he overlooked the fact that the programs of international congresses are not arranged for the purpose of establishing ideal classifications of the various branches of knowledge, but rather to furnish a working basis for scientists from all countries in order to establish an international understanding about the work pursued or to be pursued, with special reference to the problems under consideration. It is evident that the schedule of the work of these congresses must vary from one meeting to the other, both in its purpose and content, and that no two such schedules will be alike, as, for instance, reference to the reports of the three last congresses, those of Berlin, of the United States and of Geneva, and to the prospectus of the coming congress at Rome, will show. Moreover, a closer examination of the titles of the papers offered at the various international congresses or of the past volumes of the leading scientific periodicals for any one period discloses another characteristic fact. It is that each congress as well as each periodical has a field of its own, as it were, and that, although striving to

do justice to the whole subject as much as possible, there is, in the congresses, a law of historical evolution, and in the periodicals, one of division of labor, which gives to each of them a stamp of its own. At the early international geographical congresses, for instance, the interest in the great discoveries of the times was paramount, but, beginning with that of Berlin, a transition made itself felt which influenced the program to the effect that more time was given to the sifting and examining of the material at hand, and the scholarly side of the science came more and more to the front. Among the periodicals there are some especially favored by explorers for the publication of their original reports, such as *Petermanns Mitteilungen* and the *Geographical Journal*. Others specialize more in economic and social geography, still others in the anthropological and ethnological sides of the subject, and another group prefers to furnish a common meeting ground for the devotees of general physical geography. This is a great advantage, because in our era of specialization no working scientist can keep up with the literature of his entire subject, and he must know where to look first for contributions to his own specialty. But it is obvious that under these conditions statistics founded on the contents of one periodical only cannot but lead to erroneous conclusions, and for this reason I have chosen, not five years of one periodical, but one year each of five, in order to obtain a picture of the actual state of things.

In spite of the essential differences which exist between Colonel Close's tables and my own, there is a partial resemblance between the two groups which ought not to pass unnoticed. It is the conspicuous drop of the figures in Sections 3 to 7 (vulcanology and seismology; glaciers; hydrography, potamography and limnology; oceanography; meteorology and climatology; terrestrial magnetism), and sometimes in Section 8 (biological geography), which proves that these sections are not coordinate with Sections 1, 2, 9, 10, 11, 12 (mathematical and cartographical geography; general physical geography; anthropology and ethnography; economic and social geography; explorations; systematic regional geography). This fact is further proven by the programs of the other international congresses in which the former subjects do not appear as independent sections. This is not doing them injustice, for, however expedient their separate treatment may be, for reasons of practical convenience, they do not cease therefore to be *subdivisions of general geography*, and every paper offered in any one of these sections could with equal propriety have been listed under one of the principal divisions of general physical geography: air, ocean, land.

Colonel Close's criticism of the inclusion of these subjects in geography as indicative of the lack of unity of geography as a science seems peculiarly unappreciative of the close relationship of all branches of modern science. What science is there, with the possible exception of mathematics, that is not nowadays interrelated with one or several other sciences? The times when every branch of

knowledge had its territory precisely limited are gone never to return. Those were the times when the contents of the so-called descriptive sciences were lists of names, when the man who knew most plants was the greatest botanist and he who knew the names of the largest number of animals, the greatest zoölogist. In those times the best geographer, too, was he who had the largest number of towns, capes, mountains, rivers, at the tips of his fingers. But modern thought has revolutionized the methods of study and with them the contents of the sciences themselves. In proportion as the scientific spirit spreads specialization increases. Organic and inorganic chemistry, for instance, have almost become separate sciences. In a similar way the scientific pursuit of geography has resulted in the growth of special branches, of which geology itself was the first, with all the other "ologies" following in their turn. Of course, geography remains the "common meeting ground" for the daughter sciences, because it is their mother earth from which they must not depart under penalty of losing the large points of view without which all special work remains fragmentary.

The close relationship of geography to other sciences is further evidenced by the early careers of many prominent geographers. It is a fact that more than one of the leading men in our science, especially among the older generation, was a specialist in some other branch before becoming a geographer. The reason for this was not the non-existence of geography as a science, but the fact that at the time when these men entered upon their scientific work, geography was not yet recognized as such, nor taught at the universities at all. They made their start in science by means of the subjects which were then included in the courses of study; but while their fellow scholars, who were born geologists or biologists or historians, remained faithful to the subjects of their first choice, those who were born geographers proceeded into the region of the unknown and *created* what we now recognize as scientific geography. It goes without saying that the character of the previous studies of those pioneers predetermined to a certain degree what part of geography each would be most fit to originate; those hailing from geology developed the physiographic aspects, those in command of historical or biological methods, the ontographic aspects of the subject. From the moment they had entered upon this work, however, they ceased to be geologists or biologists or historians and became geographers. The geographers of the present generation who began work under their guidance and found geography ready to be taught at the universities were geographers from their very beginnings and were obliged to prove their claim of being scientists by *geographical research.* Their special inclinations and gifts, of course, lead them to choose sometimes one, sometimes another, department of the subject for their special work, and accordingly to combine their studies with mathematics, or geology, or economy, or biology. This is as little a reason for calling them mathematicians, or geologists, or economists, or biologists, as the fact that a

sociologist chooses history for his minor subject makes that man a historian. A scientific book on geology will have to refer to physics, chemistry, zoölogy, in ever so many places, and it is not the geologist, but the physicist, chemist, zoölogist, who did the original work on which the geological structure rests; the geologist only uses the results of these fellow scholars as tools for his own work. Yet nobody has ever charged geology with being a *compilation* of physical, chemical, zoölogical matter borrowed from various sources! Why should geography alone, under the same circumstances, be accused of being nothing but a compilation of other sciences?

Moreover, not only are all branches of modern science closely related, but the center of interest in any one science is subject to change periodically and locally. There was a time in zoölogy when invertebrate embryology was the chief claimant of attention, as in our days determination of sex, eugenics and similar problems seem to take the lead. So in geography there was a time when exploration and mapping stood in the foreground. It was the time when, after Humboldt and Ritter had built up their imposing constructions of the earth and its inhabitants, geographers with a modern scientific turn of mind noticed on what imperfect foundations the superstructures were built and realized that the most imperative need for a geography that would be scientific was a more exact knowledge of its object, the earth itself. The name of August Petermann embodies that period. It was the era of the great modern discoveries and the era, too, of the foundation of the great geographical societies whose main purpose was *not* to cultivate pure science, but to interest the public at large in questions of discovery and exploration. For the explorers needed funds to carry out their expeditions, and the means of the societies would increase in proportion to their membership. In the scientific part of the geographical world this rather sensational interest in the subject has now given way to a more scholarly understanding of it, and this changed attitude is reflected in the above mentioned change in the character of the international congresses. Only in the popular conception of geography does exploration still occupy the first place among its various branches.

The fact alone that Colonel Close takes the activities of a geographical society as his main standard for determining the scientific character of geography proves how far he is from appreciating the actual situation. Otherwise he would not place a geographical society, however leading among its class, on a level with mathematical, astronomical, geological and similar societies. The latter are associations of specialists, founded to keep the devotees of their respective sciences in touch with each other and thereby to promote scientific progress. No persons are admitted to membership unless they are doing original work or hold a position which is in itself a guarantee of the scholarship of its occupant, even though he might not be a fecund writer. The proceedings or journals of these

societies are the organs for the publication of the work of their members, and their contents are, as a rule, unintelligible to the general public. In the geographical societies, as has been shown above, scholarly interests are but indirectly represented; their size alone proves what a large percentage of non-geographers they include. Of course geographers belong to them as well; they even do most of the work. But in their addresses they must adapt their subjects to the character of their audiences, the majority of which are lay hearers, and therefore most of them prefer to read their purely scientific papers at the meetings of strictly scientific societies.* There is only one such association, to my knowledge, which is a truly scientific geographical society of equal standing with mathematical or geological societies because its membership is limited to professional geographers: The Association of American Geographers. Unfortunately this association has only recently resolved to publish a journal of its own; it is to that journal that we may look some day as an authentic criterion of the scope of geography as a science. But the typical geographical society, whether subsidized by a government or maintained as a private corporation, is not a clear source from which to obtain such information; in its work exploration will always occupy a space quite disproportionate to its rôle in scientific geography, because exploration is that part of geography which appeals most strongly to general and popular audiences. This must in no way be construed as a reproach to geographical societies; they are fulfilling a very useful mission and have certainly done more, in their way, for the general education of the public than strictly scientific societies ever can expect to do; but this is not a reason for selecting their work as the basis for a definition of the scientific character and value of the subject.

The real character and content of scientific geography has been defined so often and so completely by its leading representatives in all countries where it is pursued that anyone not conversant with it need but consult their works in order to familiarize himself with its nature. While differing on minor points they all agree that, in spite of the complexity of the subject, the unifying element is given in the object of study: the surface of the earth, as a whole and in its parts, studied either from the systematic or from the monographic, or regional, point of view. Just as, in zoölogy, an author may write either on general problems (such as the operation of Mendel's Laws), or on questions of systematic importance (such as the question whether *Limulus* belongs to the crustaceans or to the spiders), or may write a monograph on some species (cf. Leuckart's work on *Trichina*), so in geography one may investigate either problems of general geography (such as the location and distribution of volcanoes), or systematic problems (such as the determination of the type, whether fiord or *ria*, to which

* This fact easily explains why, in the work of the Berlin Geographical Society, the percentage of papers on exploration is so much larger among the addresses than among the contributions directly furnished to its journal.

the Maine coast belongs), or the *ensemble* of a special geographical region (as exemplified by Ratzel's monograph on the United States). There is no reason why the first three problems should be considered scientific while the latter three should not—unless they were treated in an unscientific way, in which case both groups would be equally open to criticism. But what is it that, admitting the constantly increasing complexity of the sciences, determines the special scientific character of any problem, since quite a number of problems may with equal right be classed with several sciences and treated in various text-books? In answering this question we shall never err far from the truth when we remember Professor Davis's principle that "it is the relation into which the object enters that determines its place." When we find zoölogical, geological, economic discussions overlapping upon geographical ground, or vice versa, we know that the subject belongs to geography as soon as it is presented in one of the relations which we claim as purely geographical. *Such relations,* on which all geographers of note agree, *are location and distribution as stimulus of, or response to, existing conditions on the earth's surface,* and they apply to both inorganic and organic bodies. Thus the drowning of the river valleys of New England is a geological fact and the settlement of New England a historical one; but the fact that the harbors formed by the drowned valleys afforded protection to the settlers and that for this reason the original settlements grew up at the heads of these bays, belongs to geography, for it expresses the influence of location on a phenomenon associated with that section of the earth's surface, or the natural law which controls the occurrence of that phenomenon. The person who first establishes such a law and follows its application all over the inhabited part of the globe is *not* compiling geology and history, but is doing "original, definite, and quantitative research" in *geography.*

One word more on the subject of distribution. It is true that distribution alone does not constitute geography, and in this respect the explanation given by Professor de Martonne and quoted by Colonel Close is not quite satisfactory. The mere fact that the botanist "seeks to determine its [the plant's] area of extension" does not transform the investigation from a botanical to a geographical one. I cannot do better than again to quote Professor Davis* on this matter when he says that, if geography is so understood, then the distribution of anything might be fit for geographical study. Moreover, such distributional treatment "is apt to take up *one kind* of thing at a time and follow it wherever it is found, thus failing to give account of the natural occurrence of many kinds of things in their actual association which geography demands." Similarly, a map showing the distribution of any chosen specimen or phenomenon is not for the sole element of distribution a geographical map, but remains a part of the science to which its subject belongs.

*Geographical Essays, No. 1.

What then constitutes the geographical element in distribution? This question, too, has been answered before. Says Professor Herbertson of Oxford*: "The recognition of geographical forms has gradually been taking place. It has necessarily been late in the history of thought, first, because our knowledge of the surface of the globe was insufficient until the explorations of the nineteenth century had traced its fundamental features; and, second, because the specialist interpretation of the accumulated data was a necessary preliminary to its utilization for systematic geography.

". . .A period of intense analytical specialization was a necessary preliminary to the more complete synthesis. . . . Speaking generally, this synthetic work must have been carried far enough to permit of at least rough mapping before the geographer can begin his part of the task. In Berghaus's Physical Atlas, and for meteorology in Bartholomew's volume, we have the raw material for systematic geography. These maps, however, unless it be in the case of configuration, are not drawn from the geographical point of view, but from those of the various specialists who have edited the volumes.

"In what way is the geographer to use this raw material in working out a systematic geography? This involves the question, what is the subject-matter of geography? This I take to be the study of phenomena from the point of view of their distribution on the surface of the earth, *in natural groups, and not as isolated phenomena.*†

"Geography is not concerned with [the] distribution of one element on the earth's surface, but with all. If geographers first regard the distribution of different phenomena separately, it is only in order to help them later to consider them together more effectively. This is not to say that all these different distributions are of equal importance, but that all must be taken into consideration before the problem of systematic geography is solved. . . . Configuration is necessarily the framework, but we must not think of it merely as a more or less irregular surface; we must see it as part of a solid which comprises not merely the soil beneath, but the air above, with relations to other parts of the earth and also to the influences coming from outside the earth. This gives a movement, a life to the whole, and it seems to me useful and not altogether fanciful to speak of this geographically discerned complex as a macro-organism."

And, in a presidential address to the British Association, Professor Herbertson said: "I wish to lay great stress on the significance of vegetation to the geographer for the purposes of regional classification. I do not wish to employ a biological terminology nor to raise false analogies between the individual organism and the larger units of which it is a part, but I think we should do well to consider what may be called the life or movement going on in our units

* "The Major Natural Regions," *Geogr. Journ.*, Vol. 25, 1905, No. 3, p. 301.
† The italics are mine. M. K. G.

as well as their form . . . . By vegetation I mean not the flora, the historically related elements, but the vegetable coating, the space related elements. Vegetation in this sense is a geographical phenomenon of fundamental importance. It indicates quality—quality of atmosphere and quality of soil. It is a visible synthesis of the climatic and edaphic elements. Hence the vast lowlands of relatively uniform land features are property divided into regions according to vegetation—tundra, pine forest, deciduous forest, warm evergreen forest, steppe, and scrub. Such differences of vegetation are full of [geographical] significance."

Similarly, a map showing the distribution of limestone soils is a geological map, but a map which shows how in the limestone country human habitations are gathered into compact villages around one or more deep wells, while in the bottom lands they spread comfortably along the river, is a geographical map, and what is true of the map is true also of the written word. The ripest product of truly geographic scholarship is therefore the geographical monograph devoted to the study of an individual geographical region, the type of work so well represented in modern French and German geographical literature, and of which England possesses the classical example in Huxley's Thames. If he has not yet found more disciples in this field in England the cause probably is that the Empire has been too busy exploring, surveying and mapping its large territories. But in proportion as the English universities pay more attention to the long-neglected subject of geography, it is to be hoped that this phase of geographical research will be better appreciated by all who are called upon to utter an opinion on this subject.

Further Comment

(Extract from "Prof. Hellmann on the Floods of the Oder" [a review] by Hugh Robert Mill, D. Sc., *Geographical Journal,* Vol. 38, No. 6, 1911, pp. 601-602.)

Colonel Close, in his recent address as president of Section E of the British Association, called attention to "the extremely frank way in which vulcanology, seismology, meteorology, climatology, terrestrial magnetism, anthropology, and ethnography are included in geography." He went on to say that the papers "on meteorology and climatology" which had been read before the Royal Geographical Society during the last five years might have been read with perfect appropriateness before the Meteorological Society and made the suggestion that the authors who send such papers to the *Geographical Journal,* instead of sending them to the *Journal of the Royal Meteorological Society,* "in so doing appeal rather to the public at large than to men of their own special sciences." If this

opinion be accepted, it places a geographer who is asked to review a meteorological work for a geographical society in a somewhat awkward position; for it would follow that such a work must be presented to the readers of their journals not as geographers, but as members of the public at large. I, on the other hand, hold so different a view of the relation to geography of the sciences referred to, and of geography itself, that in writing as a geographer for geographers, I feel that I must vindicate my position before taking up the subject of this review.

In the article "Geography" in the Encyclopædia Britannica, 11th edition, I said: "Geography is a synthetic science dependent for the data with which it deals on the results of specialized sciences, such as astronomy, geology, oceanography, meteorology, biology, and anthropology, as well as on topographical description. The physical and natural sciences are concerned in geography only as far as they deal with the forms of the earth's surface, or as regards the distribution of phenomena. The distinctive task of geography as a science is to investigate the control exercised by the crust-forms directly or indirectly upon the various mobile distributions. This gives to it unity and definiteness, and renders superfluous the attempts that have been made from time to time to define the limits which divide geography from geology on the one hand and from history on the other."

If this view of geography is kept in mind a paper on the distribution of rainfall would be seen to be more appropriate to a geographical than to a meteorological journal, because the distribution is conditioned by the relation of land and sea, the tracks pursued by atmospheric depressions, and the configuration of the land. A paper on the formation of rain would, of course, be more appropriate to a meteorological than a geographical publication, because it deals with the non-geographical part of the subject. In general, I consider that no discussion of the distribution of anything is foreign to geography, although the thing in other than its distributional aspect may be the subject-matter of another science. If Colonel Close is right I am wrong in my point of view, and the Editor of the *Geographical Journal* is wrong in inserting this notice, for it is not directed to the public at large, but to those trained in geography, or at least so far interested in geography as to have an interest in it greater than that of the casual reader.

GEOLOGIC MAP OF NORTH AMERICA*
A REVIEW

BY

E. C. CASE

AND

W. L. G. JOERG

It is with much pleasure that one welcomes this map, which is a revision, on the same scale, of the map issued at the Tenth International Geological Congress which met in the City of Mexico in 1906, and it is with increased pleasure that one considers the minute care and skilful workmanship which has gone into its preparation. An increased brilliancy of colors makes it less pleasing in general effect at the first glance than the original, but one soon forgets this in appreciation of the increased clarity of the boundaries accomplished by the change. Perhaps only in one or two cases is there any lack of contrast in the different areas. The Middle and Upper Ordovician (No. 17) is not easily distinguished in some cases, notably where it is next to or surrounded by the Pennsylvanian (No. 12), as in west central Arkansas.† The addition of small numerals inserted to aid in the identification of formations is also a valuable innovation.

Turning naturally to Alaska to see what has been accomplished in that Territory we are struck by the fact that some parts which were filled in on the first map have been left bare or have been considerably revised. The region around Point Barrow is now left bare, and the country between the Noatak and the Selawik Rivers is now mapped only in the immediate valleys of the Kobuk and the Selawik Rivers. The portion of the Alaska Peninsula marked Jura-Trias on the older map is now shown as Marine Jura, and the area mapped is confined to the eastern end of the peninsula. The lower portion of the valley of the Koyukuk River is given only as Lower Cretaceous, and the portion of the valley of the Yukon below the mouth of the Koyukuk and the region northwest of this to the coast is marked Upper Cretaceous. Between the Matanuska and the Susitna Rivers a considerable area is left blank, and along the upper portion of the Tanana River there is a change from metamorphosed Paleozoic sediments and intruded pre-Cambrian igneous to metamorphosed pre-Cambrian with supposed Paleozoic and Mesozoic and post-Cambrian intrusives. The great area along the border line between the Yukon and the Mackenzie Territories left blank in the earlier map is now filled in with the same formation as lies to the west, metamorphosed Paleozoic sediments.

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*GEOLOGIC MAP OF NORTH AMERICA. Compiled by the United States Geological Survey in cooperation with the Geological Survey of Canada and Instituto Geologico de Mexico, under the supervision of Bailey Willis and Geo. W. Stose. Scale, 1:5,000,000. Pl. I. *U. S. Geol. Survey, Prof. Paper* 71, 1911. Also sold separately: price, 75 cents.

† This indistinctness is due to a fault in the color plate. In other regions where the Pennsylvanian and the Ordovician adjoin, as, for instance, in northern Illinois, the colors are readily distinguishable.—ASST. ED.

Turning towards the central portion of Canada and the northeast quarter of the map we note very few changes in the mapping of the Canadian Shield or the Arctic Archipelago. The map of Greenland is greatly improved by the more complete sketching in of the glaciers. Pre-Cambrian intrusives are now shown on the southern end of Greenland and for some distance up the southern end of the eastern side. The coast beyond Cape Brewster is mapped in considerable detail, Jurassic, Triassic and Devonian being shown; the extreme northeastern part of the coast is still left blank.

Newfoundland, Prince Edward Island and New Brunswick are left practically unchanged. In the vicinity of Moosehead Lake there are a few changes consisting mostly in the extension of the Cambrian and the inclusion of a strip of Ordovician in a northeast-southwest direction across Moosehead Lake.

In the portion of Canada north of New York and Vermont there are several changes in the valley of the St. Lawrence River and in the region to the east, notably the subdivision of the part previously marked Cambrian into Cambrian-Ordovician and Ordovician.

In the southeast quarter of the map the chief changes are in the mapping of the Piedmont Plateau and the Atlantic Coastal Plain. The outlines of the Newark formation are changed somewhat in the former, but the chief changes are those in the regions marked pre-Cambrian and metamorphosed Paleozoic sediments in the old map, which are now referred in large measure to pre- and post-Cambrian intrusives, and the inclusion of some Cambrian and lower Ordovician in Virginia as well as in North and South Carolina. The area of Lower Cretaceous in North Carolina is greatly limited by the mapping of larger areas of pre- and post-Cambrian intrusives. The coastal plain of North Carolina and the northern portion of South Carolina is changed by the increase in the area of the Lower Cretaceous and the limitation of the Miocene. On the coast from the central portion of New Jersey to Florida there is mapped a strip of Quaternary of greater or less width. This is extended around the borders of the Gulf Coastal Plain and includes most of the southern half of Florida. Notable also is the inclusion of a strip of marine Oligocene which appears in South Carolina and, taking in the northern half of Florida, extends around the whole of the Gulf Coastal Plain. The Eocene of the Coastal Plain is less changed. It is somewhat limited in area in Georgia, and a strip is included in the Mississippi Embayment on the west side of the Mississippi River, extending as far south as Helena in Arkansas. In the same region the Cretaceous is carried around the north end of the Eocene so that it reaches as far north as Cairo.

The mapping of the Appalachian mountain region is only changed in minor details. The same may be said of most of the northern part of the Mississippi Valley. In Minnesota a large area previously marked as Eo-Algonkian and pre-Cambrian is now considered as Upper Huronian. A large area of pre-Cambrian is recognized along the course of the Red River of the North in North Dakota, and the area along the course of the Minnesota River is increased. The Sioux Quartzite is reduced in area in Minnesota.

Returning to the south we find that in Cuba Upper Cretaceous, Triassic and Jurassic are substituted for pre-Cambrian in the western end and post-Cambrian intrusives for pre-Cambrian igneous in the eastern part. There is little change on the eastern side of Mexico, beyond the separation of the extremity of the peninsula of Yucatan as Pliocene from the bulk of the peninsula, which is

reckoned as early Tertiary. On the western side of Mexico the peninsula of Lower California is altered by the continuing of the post-Cambrian intrusives down the center as far as Cabo Virgenes and Punta Abrojos. The lower end is marked as Upper Cretaceous. In the north central portion of Mexico the Tertiary and later effusives are limited by the extension of the Quaternary and the mapping of a considerable number of isolated areas of lower Cretaceous.

The western portion of the United States, shown in the south-west quarter of the map, has, as is to be expected, many changes. The blank in the southwestern part of Texas is filled in by the mapping of Tertiary and later effusives and by a small area of Ordovician and Permian. The great blank in central New Mexico is filled in largely with undifferentiated Carboniferous, and the Triassic is carried down the eastern side of the Pecos valley as far as Roswell. The blank in the southern parts of Arizona and California is filled in with Quaternary and isolated masses of pre-Cambrian and, in southeastern Arizona, isolated masses of Paleozoic. The blank in northeastern Arizona and southeastern Utah is filled with Jura-Trias, with a small center of upper Cretaceous. The adjacent portions of Colorado, Utah. and Wyoming around the Uinta Mountains is marked as covered by continental Eocene, as is the region in northwestern New Mexico at the head of the San Juan River; both of these were formerly marked as Eocene, but the true nature of the deposits was not indicated.

There are numerous changes in the mapping of details in the front ranges of the Rocky Mountains, but they can hardly be described in a limited review. The valley of the South Platte around Greeley and Denver is still marked as Laramie. The portion of South Dakota including the Big Bad Lands and the valley of the North Platte in western Nebraska and eastern Wyoming are mapped as continental Oligocene. A great area in western North Dakota, northwestern South Dakota, eastern Wyoming and Montana formerly called Laramie is now marked as continental Eocene with a fringe of doubtful Laramie or basal Eocene.

The great expanse of Cretaceous marked on the earlier map in northern Montana is further broken by the introduction of the uplifts of the Big Snowy Mountains and similar smaller areas just east of the Little Belt Mountains. West of the Little Belt Mountains the Belt Terrane occupies a wide strip running north nearly to latitude 52° N. and replacing the metamorphosed Paleozoic rocks of the earlier map. In northern Montana there is a detailed mapping of the Montana coal bearing formation; this is continued into Alberta and Saskatchewan as far north as the Saskatchewan River.

In the northwestern part of the State of Washington the effusive igneous rocks near the coast are changed to Marine Jurassic. The great blank in southern Idaho and Nevada and northwestern Utah is filled with Tertiary effusives and Quaternary. The blank on the coast of northern California is filled by the mapping of Jurassic rocks, and the central portion of the Klamath Mountains is recognized as Paleozoic instead of pre-Cambrian. E. C. C.

In addition to the above appreciation of the geologic subject-matter of the new Geologic Map of North America a few words regarding its cartographic and geographic aspects may not be out of place.

The polyconic projection used on the map of 1906 has been retained for the new edition, in spite of intervening valid adverse criticism of its appropriateness*. The system of coordinates, however, has been changed on the present edition, the parallels being drawn at an interval of 4° and the meridians of 6°. They have been made to coincide with the limits of the sheets of the International Map of the World, 1:1,000,000. The letters and numerals adopted to designate the sheets of that map have been added in red along the border of the continent and on the edge of the map. On land the meridians and parallels have been drawn for every degree. The marking of every second degree, both of latitude and of longitude, not only on the edge of the map as a whole, but on the border of each individual sheet, is also a valuable innovation. Localizing is further greatly facilitated by the far more copious topologic nomenclature.

The geologic color scheme is more detailed in the new edition than it is in the old. Forty-two separate symbols are shown on the former instead of twenty-five on the latter. The grouping of the symbols in the legend is far more synoptical, as distinction is made between the symbol used for a group of undifferentiated formations and the subdivisions of the same group, as, for instance, undifferentiated Carboniferous, on the one hand, and, on the other, Permian, Pennsylvanian, Mississippian. The color sequence again follows the prismatic system in general: the greatest noticeable difference being in the change of the tone representing the Ordovician from pink on the previous edition to gray on the new. A valuable innovation is the addition, on the border of each sheet, of all formational symbols used on that sheet, thus doing away with the necessity of consulting the sheet which contains the legend.

As a product of the printer's art the map is of the best. That supreme test of accurate map reproduction, the proper superimposition of colors, is most successfully met. The forty-two colors of the map, which necessitated fourteen separate printings, register perfectly. The language of the Geological Survey *Press Bulletin* is modest, indeed: "It is believed that there are few if any other establishments in the United States capable of turning out such a production."

With regard to the geographic content of the map, attention must be called to the fact that the quality of the geologic mapping represented is not of uniform value for all regions. Thus, while the formational boundaries and designations are practically correct for the United States and southern Canada, the mapping of the northern parts of Canada is of a very general nature. In this it reflects the character of the standard Geological Map of Canada, 1:3,168,000, 1901, which has probably in part been used as a source. The designation, on the present edition, of the Mackenzie Mts. (forming the divide between the upper system of the Yukon and the Mackenzie), for instance, as belonging to the Paleozoic system, although they were left blank in the edition of 1906, is based alone on reconnaissance surveys, viz., those of Keele and Camsell.† The seemingly less comprehensive delineation of the geology of Alaska, as compared with that on the edition of 1906, referred to in Professor Case's review, is due to the fact that, for this region, only areas actually surveyed have been included on the present edition.

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*Cf. Kartenkunde, by E. Gelcich, F. Sauter, and P. Dinse, 3rd edition, revised by M. Groll, Leipzig, 1909, p. 104.

†Cf. *Annual Report*, Geol. Survey, Canada, Vol. 16, 1904, sub-reports C and CC; and Publ. No. 1097, Geol. Survey, Canada, 1910; also *Bull. Amer. Geogr. Soc.*, Vol. 42, 1910, pp. 176 and 779–780.

The greatest blemish on the map, from the geographic point of view, is its total ignorance of the results of the Mylius Erichsen Expedition of 1907-08. The absence of the characteristic Northeast Foreland of Greenland on a map bearing date of 1911 is a *lacuna* indeed, which, in this case, is emphasized all the more by the relatively large scale of the map. The inclusion of the geology of regions not belonging to North America, such as Iceland, northern Colombia and northwestern Venezuela shows that it is the intention of the compilers to portray the entire area enclosed within the borders of the map and renders difficult the validity of an excuse for the above omission. The non-inclusion of Hansen's survey of the King Haakon VII Coast of Victoria Island is further evidence of unfamiliarity with recent explorations—a condition unfortunately already apparent on the edition of 1906, which failed to show the result of Amdrup's survey in 1898-1900 of the coast of King Christian IX Land of Greenland (34°–25° W.). It is only fair to state that this omission has been rectified on the present edition.

These criticisms, however, must in no way be allowed to obscure the fact that the new edition of the Geologic Map of North America is the unquestioned standard in its field. It is indeed fortunate for us, with our dearth of private map-publishing houses doing constructive work of a scientific nature, that such institutions as the Geological Survey do not conceive their work to be limited to the production of raw material, but extend their field of activity to synthesis and generalization. For this, geography—for are not these two qualities its very philosophy of life?—and especially American geography, should be extremely grateful. W. L. G. J.

GEOGRAPHICAL RECORD

THE AMERICAN GEOGRAPHICAL SOCIETY

MEETINGS OF THE SOCIETY. A regular meeting of the Society was held at the Engineering Societies' Building, No. 29 West Thirty-ninth Street, on Tuesday evening, Nov. 21, 1911. Vice-President Greenough in the Chair. The following persons recommended by the Council were elected to Fellowship:

Miss Mura Bayly,	Dr. Francisco P. Moreno,
Eugene S. Benjamin,	George B. Shattuck,
Samuel S. Dennis,	John T. Terry, Jr.,
H. Palmer Gallaher,	Theodore Dehon Wilson,
Lawrence Lewis Gillespie,	Edwin O. Wood,
William J. Matheson,	C. Wickliffe Yulee.

The Chairman then introduced Prof. Charles E. Fay, recently President of the American Alpine Club, who addressed the Society on "The Majesty of the Mountain." A large number of stereopticon views were shown.

A meeting of the Society was also held at the same Hall on December 26,

1911. Vice-President Greenough in the Chair. On recommendation of the Council, the following persons were elected to Fellowship:

Lieut. Donald Armstrong, William Hallock,
Enoch Henry Currier, William Williams.

The Chairman then introduced Mr. Walter McClintock, who addressed the Society on "The Land of the Blackfeet." Mr. McClintock had lived among this tribe for two years. His illustrations included a few moving pictures showing small pack trains in camp or on the march, Blackfeet dances, etc.

NORTH AMERICA

PROF. PARKER'S NEXT ATTEMPT ON MT. MCKINLEY. Prof. Herschel C. Parker of Columbia University sailed from Seattle on Jan. 24 for Alaska to begin, from the town of Seward, a winter journey to Mt. McKinley, which he hopes to ascend. His companions are Belmore Brown of Tacoma, Arthur Aten of Valdez, Alaska and Merl La Voy, all of whom participated in his Mt. McKinley expedition of 1910. The party will start from Seward with dogs and sleds, follow the line of the Alaska Central R.R., and then the regular trail to the Susitna Station, about 22 miles above the mouth of the Susitna R. Beyond this point they will have to break their own trail.

The party will go up the Susitna R. on the ice to the Forks at Talkeetna, about 65 miles above Susitna Station. Here the Talkeetna R. comes in from the east and the Chulitna from the west. They will follow the latter towards its headwaters until they can find a pass over the Alaskan Range. If they succeed in crossing the Range they will be on the northeastern side of Mt. McKinley and will make their attempt on the mountain itself from that side.

Two sledges, drawn by Eskimo dogs in charge of Aten, will carry the outfit including provisions, the whole weighing about 2,000 pounds. The base camp will be pitched at the highest point that it is possible to take the whole outfit. A still higher camp will be made at the highest point where the dogs and sledges can be used, and here the animals and sleds will be left in charge of one member of the party until the return from the summit. Prof. Parker hopes to reach the mountain by March 15, and to attack the harder part of the climb by April 1.

OUR LARGEST OUTPUT OF PETROLEUM. The Advance Chapter on Petroleum from "Mineral Resources of the United States" for 1910 says that over 200,000,000 barrels of oil, valued at nearly $128,000,000 were produced in the United States in 1910. Our petroleum industry has been marked by phenomenal increase in recent years. It passed the 100,000,000-barrel mark in 1903, was over 170,000,000 barrels in 1904, fell to 135,000,000 barrels in 1905 and rose to 178,000,000 barrels in 1908, 183,000,000 barrels in 1909 and 209,556,048 barrels in 1910. The total output of our petroleum industry to this time is more than two billion barrels. The United States is now producing more than all the rest of the world together. California heads the list of producers in 1910 with 73,010,560 barrels. The second among the oil producing states in 1910 was Oklahoma with 52,028,718 barrels. The output of these two states is practically equal to the entire foreign production. The third largest producer was Illinois with 33,143,632 barrels. There are now 148,440 oil wells in operation in the country.

OUR IRON AND STEEL INDUSTRY IN 1910. The U. S. Geol. Survey *Press Bul-*

letin (New Series No. 24) reports that in 1910 the iron ore production of the United States was 56,889,734 long tons, the pig iron production 27,303,567 tons, and the steel production 26,094,919 tons. These figures surpass all previous records. The following table shows the enormous growth of the iron and steel industry in the United States since 1900:

	IRON ORE	PIG IRON	STEEL
1900.....	27,553,161	13,789,242	10,188,329
1905.....	42,526,133	22,992,380	20,023,947
1906.....	47,749,728	25,307,191	23,398,136
1907.....	51,720,619	25,781,361	23,362,594
1908.....	35,924,771	15,936,018	14,023,247
1909.....	51,155,437	25,795,471	23,955,021
1910.....	56,889,734	27,303,567	26,094,919

PROFESSORS TARR AND MARTIN IN ALASKA. It has been stated in the *Geographical Journal* for October, and in Associated Press despatches that a Smithsonian expedition for the study of glaciers had lost all the field notes and photographic results of the season's work. As a matter of fact it was a National Geographic Society expedition under the direction of Prof. R. S. Tarr of Cornell University and Prof. Lawrence Martin of the University of Wisconsin, two of the associate editors of the *Bulletin*. No photographic negatives were lost, though, most unfortunately, one of the note books containing Prof. Tarr's data on a month's work, the first of the season, was swept away. The upset of the conveyance took place not in the Yukon but in a glacial stream in the Delta River Pass across the Alaska Range. Word has just come of the recovery by some soldiers of a sack containing a camera, field glasses, railway tickets, etc., so that a second camera and the notebook are the only things still missing, and even these may be recovered in the low water stage of the autumn.

This research expedition saw something of conditions of present glaciers and past glaciation (a) in the Kenai Peninsula near Seward and the Alaska Northern Railway, (b) along the Copper River and Northwestern Railway near Mt. Wrangell and near Childs and Miles Glaciers, (c) along the White Pass and Yukon Railway from Whitehorse to Skagway, and (d) in southeastern Alaska near Lynn Canal, Glacier Bay, Taku Inlet, and the Stikine River. General glaciation was also studied in the Copper River and Tanana Valleys and the upper Yukon River, and pleistocene physiography along the middle Yukon, as at Dawson in the Klondike region and Fairbanks, Tanana, Rampart, Circle, Fort Yukon, and Eagle in the driftless portion of Alaska. The party travelled 1200 miles up the Yukon River by steamer and made the first summer journey ever attempted from the coast at Cordova by rail to Chitina and thence 320 miles across Alaska, on a buckboard, to Fairbanks. There is a winter mail trail here and it has been traversed with pack horses in summer but never before as a whole with a wheeled vehicle. The Alaska road commission and the stage company has each made one summer wagon journey from Valdez to Fairbanks but the Tarr and Martin party made the first wagon trip across the Chugach and Alaska Ranges and through the Copper and Tanana Valleys from Cordova to Fairbanks. Results of this four months of work during the summer of 1911 will be published by the National Geographic Society. L. M.

MR. H. V. RADFORD IN NORTHERN CANADA. The Society has received a let-

ter from Artillery Lake, lat. 63° N. long. 108° W. (approx.) dated July 31, 1911, in which Mr. Radford said that he and T. G. Street, of Ottawa, had arrived from Great Slave Lake (*Bull.* Nov. 1911, p. 777), on the southern edge of the Barren Lands. They had traveled by canoe and portage 325 miles from Great Slave Lake in 21 days. At the time of writing, Mr. Radford was stopping at a camp of Yellow Knife Indians but was about to resume the journey to Chesterfield Inlet. Of the natives he says:

"These Yellow Knives are at present killing Barren Land caribou which are crossing Artillery Lake in large numbers, the southern migration having already begun. We have killed three for food with rifles. The natives are killing them with long slender spears after overtaking them in the water in their birch bark canoes. Several hundred caribou have been killed in ten days by half a dozen hunters. The women are busy drying and smoking the meat. The period of slaughter lasts about a month during which time the winter supply for the Indians and their sledge dogs must be accumulated. We have not yet seen the great herds of caribou that may be expected within the next three days. We have seen only the advance guard of the multitude, perhaps numbering 100,000 head, that pass here annually in July and August."

Mr. Radford says that he has discovered large inaccuracies in the present map of Great Slave Lake which is based largely upon the survey of Capt. George Back in 1833. Great Slave Lake is in fact two distinct lakes connected by a narrow river at one place hardly more than a fourth of a mile wide. It does not extend eastward beyond 111°42′ W. long. The long narrow island appearing on Back's map and later maps is really a point of the mainland. The slender body of water extending eastward for about 100 miles is called by the Yellow Knife *Tah Che Twa,* meaning the lake at the end of which the long portage begins. This division of Great Slave Lake into two distinct lakes greatly reduces the water area of Great Slave Lake proper; but on the other hand Mr. Radford says he has found that, on our present maps, land is indicated where a part of Great Slave Lake should appear.

He had hardly food sufficient to last to Chesterfield Inlet. If the relief supplies which he hoped to find there should fail him he would endeavor to retreat to Fort Churchill. He expected to reach Chesterfield Inlet in September and, if his supplies were there, to winter at Baker Lake, a little inland from the head of Chesterfield Inlet.

Clark University's Work in Geography. Although Clark University at Worcester has no courses in geography it is doing a valuable work in that science. During the past few years three Conferences have been held for the discussion of different parts of the world. In October, 1909, a conference was held on "China and the Far East," and its results have been published in a volume bearing that title. In October, 1910, the second conference dealt with "The Nearer East and Africa." The papers there presented were published chiefly in the *Journal of Race Development,* a quarterly publication. The third conference, which took place at the end of November, 1911, was devoted entirely to Japan: its chief papers will probably be published first in the journal mentioned above, and later as a separate volume. The object of the conferences is to gather together men who can speak with authority on the countries concerned, and who, whether by residence, travel, long study, or birth are familiar

with vital problems. It is the intention of Professor G. H. Blakeslee, to whose able management the success of the conferences is due, to so arrange the programs that all phases of life are considered. Political and historical subjects somewhat predominate, but social life, racial characteristics, education, religion, missions, industries, health and sanitation, geography, art, literature, and still other topics play a prominent part.

The *Journal of Race Development* was founded in connection with the conferences on different countries which have recently been held at Clark University, and is now in its second year. The responsible editor is Professor George H. Blakeslee, with whom is associated President G. Stanley Hall; while some twenty contributing editors represent various lines of research, including history, anthropology, geography, psychology, religion and other fields. The object of the *Journal* is to present facts of all kinds which bear on the problem of the development of races. Its special field is the more backward nations of the world, those which have just entered the comity of nations, or are still in a state of semi-civilization. In treating of these countries the editors put before themselves three purposes; first, to assist in the explanation of how races have come to be what they are; second, to discuss the methods whereby the more advanced races can aid those that are backward; and third, to bring out the many ways in which the more favored nations may be learners as well as teachers. E. H.

SOUTH AMERICA

The Railroad Around the Upper Madeira. The *Bulletin* of the Pan American Union (Nov., 1911, p. 959), says that the construction of the railroad around the nineteen falls and rapids that obstruct navigation in the Upper Madeira and the lower Mamoré Rivers is making rapid progress. It will give Northern Bolivia steam communication with the Atlantic by way of the Madeira, its tributaries, the Mamoré and Beni, and the Amazon. Starting from Porto Velho on the Madeira, the road will be 211 miles long. A short branch line up the Beni R. will circumvent the Esperanza Falls crossing the Mamoré to the main line by a bridge a half mile long.

Railroad construction began in April 1910. The road was opened for train service on Sept. 17, 1911, to mile 163, on the Bolivian frontier at the mouth of the Abuna R. The first train made the journey in a little over eight hours. It has hitherto required about a month to take goods along this stretch of the Madeira including portages around the Falls. The completed road, with its river feeders in Bolivia will give to that country a good Atlantic outlet for much of its rubber, cattle, hides, sugar, cacao, copper, gold and other commodities.

AFRICA

The Railroad in Eritrea. On Dec. 6 last year trains began running on the railroad from Massaua, the port of Eritrea on the Red Sea, to Asmara on the Abyssinian Plateau. The building of this road began in 1887 and it has been very gradually extended up the steep slopes to Asmara 73 miles from Massaua. The plateau having been reached, it will be comparatively easy to advance the line southward in Abyssinia and westward to the Anglo-Egyptian Sudan. Both of these projects are now under discussion. (*Rivista Geogr. Ital.*, Vol. 18, 1911, No. 10, p. 627.)

ASIA

MANCHURIA'S GREAT SOUTHERN PORT. Dairen is a seaport with a deep harbor on the Liaotung Peninsula of Manchuria. The Russians founded the port in 1899 on the south shore of Ta-lien-wan Bay and gave it the name of Dalny. The Russians were convinced that, as the southern commercial terminus of the Trans-Siberian R.R., the port would have a great future. Before the war between Russia and Japan, the port had made wonderful development and the Russians had built large wharves, warehouses, workshops, a cathedral, etc.

During the war between Japan and Russia, a large part of the port was destroyed. The Japanese have now rebuilt and extended the port, renamed it Dairen and have in the past four years developed an enormous export trade in beans, bean-cake, and oil-cake.

This picture shows a part of the wharves filled with bags of beans that were grown in Manchuria and now ready for export. Beans are one of the great crops of that region and the *Bulletin* of the Suez Canal Company (Nov. 2, 1911) says that a large part of the 1911 crop had already been sold in Europe. Manchuria is a splendid wheat country and both wheat and barley are largely grown; but of far greater importance in the export trade is beans which, together with bean-cake, and bean-oil, are the most important items in the external trade.

Export Beans on the Wharves of Dairen.

EUROPE

POPULATION OF IRELAND. The census of Ireland, taken on the night of April 2, 1911, shows a total population for the island of 4,381,951 of whom 2,186,804 are males and 2,195,147 are females. These figures show a decrease in the population since 1901 of 76,824 persons. The population of the island in 1841 was 8,196,597 and every decennial enumeration since that time has shown a decrease.

POLAR

OCEAN ROUTE TO THE YENISEI AND OBI RIVERS. *The Board of Trade Journal* (Jan. 11, 1912, p. 88) says that the Russian Government Committee, which has

been considering the project of the English navigator, Capt. Webster, for the establishment of regular trading intercourse between England and Siberia, has recommended that Capt. Webster be entrusted with the task of organizing regular steamship service to the Kara Sea and the estuaries of the Yenisei and Obi. His proposal is that ordinary tramp steamers shall run between England and Novaya Zemlia, calling on their way at Baltic ports. At Novaya Zemlia there is a good harbor on the southwest coast in lat. 72° N. which will be the discharging point for the Yenisei and Obi. Thence the freight will be carried to these Siberian rivers in vessels fitted to resist ice. They will be able to make three round trip voyages during the two months of the year that navigation is open. In addition to grain, the sea route will provide an outlet for Siberian timber, graphite, mica and other minerals.

OBITUARY

GEORGE DAVIDSON. George Davidson, Emeritus Professor of Geography in the University of California, died at his home in San Francisco on December 2d, aged eighty-seven years. As a scientific Assistant in the Coast Survey he went to California in 1850, shortly after the discovery of gold there. He and three other young officers volunteered to go to the west coast and to perform for one year any duty, however hard or manual, incident to the survey of the western coast. This pledge was kept, not for one year only, but through all the subsequent years of the gold excitement. Labor was so expensive that Davidson was in the singular position of having to pay more for the services of subordinates than he himself received. Professor Davidson, as he was best known after 1870 when that title was given him by the University of California, was a most indefatigable worker not only as an officer of the Coast and Geodetic Survey in charge of field and administrative work, but also as a scientific investigator. An example of his untiring energy was given when the question of the variation of latitude was mooted by astronomers, and the International Geodetic Association proposed a plan for systematic observations all around the world to test the question. Professor Davidson voluntarily undertook to assist in this and began systematic observations at the Coast and Geodetic Survey's astronomical station in San Francisco in May, 1891. Every night, favorable for observations, during a period of fifteen months was devoted to this work.

Professor Davidson was in charge of the following expeditions sent out by the Government in the interests of science: To observe the total solar eclipse, at Humboldt Bay, Cal., May, 1854; to observe the solar eclipse, at Chilkat, Alaska, August 7, 1869; to observe the transit of Venus, at Nagasaki, Japan, December 9, 1874; to observe the total solar eclipse, at Santa Lucia Mountain, Cal., January 11, 1880; and to observe the transit of Venus, in New Mexico, December 6, 1882. He accompanied the first Government expedition to Alaska after the acquisition of that territory in 1867, and in addition to determining the latitude and longitude of the principal Russian settlements where the vessel touched, he collected a large amount of geographical information concerning that little-known country.

In 1874 he made a careful study, from the engineer's standpoint, of harbor improvements, etc., in Europe and the Orient, which prepared him to render valuable service on the Advisory Board of Harbor Improvement, San Francisco,

and as a member of the Commission of Irrigation for California. When Cambridge, Mass., and San Francisco, Cal., were connected by telegraphic longitude, he was in charge of the San Francisco end of that work.

His books, pamphlets, and papers upon many phases of scientific, engineering, and geographical research number more than 260. They include papers on solar eclipses, transits of Venus, the geography and history of the Pacific States and Alaska, discussions of the early English, Spanish, and Russian voyages of discovery on the Pacific coast, and sailing directions for California, Oregon, Washington, and Alaska. His Pacific Coast Pilot is a volume of 700 pages, showing his remarkable capacity for study and research by its wealth of valuable historical and geographical information. Other scientific publications were two field catalogues of time stars, one of 983 and the other of 1278 stars; and a table of star factors, A. B. and C., for the reduction of time observations.

In recognition of the scientific work of Professor Davidson the degree of Ph.D. was conferred upon him by Santa Clara College in 1876; that of Sc.D. by the University of Pennsylvania in 1889; and that of LL.D. by the University of California in 1910. He was elected to the National Academy of Sciences in 1874, Regent of the University of California in 1877; appointed member of the Mississippi River Commission in 1888; delegate to the International Geodetic Association in 1889; elected corresponding member of the Bureau of Longitudes, France, 1894; elected member of the Academy of Sciences of the Institute of France in 1897; and created Knight of the Royal Order of Saint Olaf, Norway, in 1907. In 1908, he received the Daly Gold Medal of the American Geographical Society.

He was for sixteen years President of the California Academy of Sciences, and for thirty years President of the Pacific Geographical Society. In 1867 he devised a new instrument of precision which is known as the Davidson Meridian Instrument, and it has been generally used by the Coast and Geodetic Survey. He also perfected new forms for vertical clamps and tangent screws.

In addition to his services in the Survey he served on the Irrigation Commission of California; the Advisory Board of Harbor Improvement, San Francisco, Cal.; the Mississippi River Commission; and the United States Assay Commission. After severing his connection with the Coast and Geodetic Survey in 1895, Professor Davidson was a consulting engineer in San Francisco. Later, he was appointed Professor of Geography in the University of California, where his profound knowledge of his subject, his facility in imparting information, and his genial way with the students made this class one of the most popular in the university. J. J. GILBERT.

Mr. William Churchill has sent to the *Bulletin* these reminiscences of Professor Davidson:

"The Lick Observatory was Professor Davidson's suggestion. James Lick was seeking to dispose of his wealth. He had no knowledge of astronomy, no interest in the science, but he knew Davidson and respected the man who disregarded money-making for a higher though less gainful pursuit. His thought was drawn in the direction of a great telescope. He learned from Prof. Davidson that the greatest refractor was 30 inches. His idea was to multiply the Poltava glass by two; in other words, California should have a five-foot glass. He wrote in his will that the glass to bear his name should be twice as large as

the biggest in the world. It took long argument from Davidson to secure the formation of a plan which was within human possibility. The observatory which crowns Mount Hamilton in the dry sky above the Santa Clara valley is the Lick Observatory, but we owe it to George Davidson.

"Word came to Professor Davidson, one day, that a butcher in Oakland was working to become an astronomer, beginning at the bottom, striving to make his own telescope and mount. Davidson went across the bay and talked astronomy to the butcher, took him to his own observatory on the summit of a San Francisco hill and gave the young enthusiast his first glimpse at the heavens through a powerful equatorial. Together they worked over the young man's home-made observatory. In Oakland was a certain rich man and George Davidson brought it to pass that the wealth of the rich man and the butcher's zeal for the heavenly science were harnessed for the public good. The city of Oakland was the first city of the world in which an observatory was made a part of the public school system, the Chabot Observatory; and the butcher who had sacrificed so much to make his own glass was appointed Director and had the rare pleasure of installing a good glass.

"When Professor Davidson wrote me after the San Francisco earthquake, the burden of his letter was that due credit should be given to the Weather Observer who had saved his instruments and had climbed columns still hot to reopen a station on a ruin over which the fire had swept. Not a word to tell me, that which I learned from others, that his own observatory had been thrown open to homeless women and children and that he had dismounted his equatorial lest in another shock it might menace these helpless sufferers."

COUNCILLOR JOHN S. BARNES. The death of Captain Barnes occurred on Nov. 22. At a meeting of the Council of the Society on Dec. 21, 1911, his death was announced and the following minute was adopted:

"In the death of John S. Barnes, The American Geographical Society has lost one of its most distinguished Fellows and the Council one of its most useful members. Born at West Point within the boundary of the nation's military reservation, and educated at The Naval Academy, Annapolis, his earliest associations as well as his academic environment tended to preserve in him the soldierly traits, which his distinguished ancestors had implanted, and helped develop in him the qualities which made him so useful in later life. His naval career early gave him a warm interest in travel and in geographical discovery and in 1874 he became a Fellow of this Society, and in 1907 a member of its Council. His wide range of intellectual interests, his devotion to the objects of his pursuit, his sturdy sense of obligation and devotion to the performance of all duties entrusted to him, and his sterling common sense and good judgment, all served to make him a valued and useful member of the Council and one whose absence will be much felt.

"*Therefore,* it is resolved that the Council of The American Geographical Society order that this minute be spread upon its records and that a copy of it be transmitted to the family of its late member, Captain John S. Barnes, together with the sympathy of this body for them in their bereavement."

GEOGRAPHICAL LITERATURE AND MAPS

(INCLUDING ACCESSIONS TO THE LIBRARY)

BOOK REVIEWS AND NOTICES

(The size of books is given in inches to the nearest half inch.)

NORTH AMERICA

The Mount McKinley Region, Alaska. By Alfred H. Brooks. With descriptions of the Igneous Rocks and of the Bonnifield and Kantishna Districts, by L. M. Prindle. Professional Paper 70, 234 pp., maps, illustrations and index. U. S. Geol. Survey, 1911.

In the exploration and development of Alaska, the work of the United States Geological Survey is destined to occupy first rank. It has been a geographic work of the highest importance, oftentimes carried on in a wholly unknown and unexplored field, and done in such an unostentatious manner that the outside world has known little about it. Some of the journeys made by members of the United States Geological Survey, perhaps barely and modestly referred to in a brief narrative prefacing a scientific report, have been really remarkable instances of daring exploration, rivaling some of the expeditions of less scientific character, that, with proper advertisement, have received widespread attention.

Among these expeditions is that made by Mr. Brooks, in 1902, into the then practically unknown Mount McKinley Region. In 105 days a distance of 800 miles was covered, largely in an unexplored region, traveling from the seacoast near the head of Cook Inlet across the Alaska Range to the Yukon River. During this journey, lasting from June 1 to September 15, the party traveled every day but nine, and when they reached Rampart on the Yukon only eleven out of the original twenty horses remained. Even the modest narrative of the expedition gives some idea of the great difficulties and dangers encountered.

Various conditions interfered with the early publication of the full report of this expedition, though some parts of it have appeared. As compensation for this delay it has been possible for Brooks to make use of the explorations of a number of other members of the Geological Survey in this general region and therefore to make his Mount McKinley report cover a far wider area than that of the mere traverse of 1902 and to introduce a much broader and more general consideration of the geographic and geologic features of this large area than would have been possible if published on the return of the expedition. Whereas the investigations of the original expedition covered an area of about 10,000 square miles, the subsequent studies have made it possible to discuss the features of an area equal to over 30,000 square miles.

The main portion of the Mount McKinley report is naturally devoted to geology, but there is a clear description of the geography of the large area included and an interpretation of the main physiographic features. It is shown that the

geological history has been exceedingly complex as a result of changes of level, rock folding, igneous intrusion, and denudation; and, while not all the elements of the problems presented are worked out, the main features are discussed with that breadth of view which Brooks has already so clearly exhibited in his Professional Paper on "The Geology and Geography of Alaska." The paper is clearly and interestingly written, it includes a vast amount of detailed information, the many problems of general interest are adequately presented and discussed, and there are abundant illustrations, both maps and half tones. Some of the latter are really remarkable mountain photographs. One section of the report is devoted to a discussion of the topographic survey by D. L. Reabury, who adopts as the elevation of Mount McKinley 20,300 feet and of Mount Foraker 17,100 feet.

Brooks believes the region covered by his report to be one of high future promise. Already there has been considerable gold mining, and the region also includes the well known Matanuska coal fields concerning which Brooks says: "The high-grade steaming and coking coals of the Matanuska Valley have, so far as known, no equal in the Pacific states except in the Bering River field." Yet the extensive coal deposits of this region are untouched. He says: "Take it all in all, the Mount McKinley province, as here defined, is one of the richest parts of Alaska. It only needs better means of communication and more capital for large enterprises to continue the prosperity which it has had in the past. Such advancement will attract a population which in turn will make a local market for the farmer and assure a development of the agricultural resources, which are of no mean proportions . . The whole matter of agriculture in this part of Alaska hinges on the finding of a market. If railroad transportation to Fairbanks through the Susitna valley were available, no doubt an agricultural population would spring up along the route of travel."

Brooks makes clear, what is widely known to those who are familiar with Alaskan conditions, that neither the coal fields nor the agricultural resources can do other than lie dormant until the region is rendered accessible by railroads. Even in gold mining, only the richest ground "can be profitably exploited under the present high cost, which can not be materially reduced except by more direct and cheaper lines of communication with tidewater." It is the author's belief that a railway system is demanded from the coast into the Susitna and Matanuska basins, thence on to the navigable Tanana, supplemented by necessary branches and by a system of wagon roads and trails. He says that when such a transportation system "has been established to supplement the present water transportation, then, and then only, can a large industrial advancement be expected in this province."

Upon the question of the relative merits of government and private ownership, Mr. Brooks, as a scientific worker under the National Government, naturally remains silent. R. S. TARR.

The Mineralogy of Arizona. By F. N. Guild. 103 pp. and index. The Chemical Publishing Co., Easton, Pa., 1910. 6½ x 5.

This small volume, in describing the minerals of Arizona, follows the classification used by Dana. The chapter headings are, accordingly, those of the descriptive mineralogy portion of the "Text Book of Mineralogy." In general, the notes on the minerals are brief, but when the minerals are peculiar to the

State as in the case of the Tuscon meteorites, Cañon Diablo iron, petrified wood, caliche (calcareous deposits) and so on, the treatment is fuller. The final chapter describes the new mineral discoveries in Arizona such as coronadite, morencite, copper pitch ore and arizonite. The book appears to be carefully compiled and it includes in the text references to the literature of the various minerals which greatly enlarges the usefulness of the book. ROBERT M. BROWN.

Highways and Byways of the Great Lakes. By Clifton Johnson. xiv and 328 pp., and illustrations. The Macmillan Company, New York, 1911. $2. 8 x 6.

Mr. Johnson follows parts of the lake shores, characterizes the people and their environment, hits off rather effectively the atmosphere of life and of things and helps us to see facts and conditions as well by his word pictures as by his photographs. This is the kind of geography that Mr. Johnson writes and though wholly of the popular order it serves a useful purpose. Perhaps the best feature of Mr. Johnson's books is that they give a graphic idea of how people live and what they are in various parts of our country.

Ye Kingdome of Accawmacke or the Eastern Shore of Virginia in the Seventeenth Century. By Jennings Cropper Wise. x and 406 pp., appendix and index. The Bell Book Stationery Co., Richmond, Va., 1911. $2. 9 x 6.

An interesting and instructive book. The narrow peninsula extending southward from Maryland between Chesapeake Bay and the Atlantic Ocean, being two counties of Virginia, is the land of this history. The story begins with Verrazano's reputed discovery of this eastern shore in 1524 and ends with the calming of the excited colonists, inflamed over religious matters, by the abdication of James II during the closing years of the seventeenth century. Within these pages there is detailed history of local affairs and also themes of a broader scope and a more far reaching application. Five chapters, following the historical narrative proper, trace the connection with this peninsula of various uncorrelated customs, resources and concomitants such as the church, industries, commerce, horses, game, fish, social customs and the like. All of this is live material written in a spirited fashion; and whether the text discusses the origin of the "banker" pony or tells of Margaret Teackle's desecration of her reverend father's house by holding therein a Sunday dance in his absence, the author wrote with a broad knowledge of his subject based upon a large fund of details and an abiding interest in this little "kingdom of Accawmacke." ROBERT M. BROWN.

A Historical Geography of the British Colonies. By J. D. Rogers. Vol. V: Canada. Part III: Geographical. v and 302 pp., maps and index. Part IV: Newfoundland. xii and 274 pp., maps and index. Clarendon Press, Oxford, 1911. 7½ x 5 each.

These are intensely interesting books dealing in a comprehensive way with the development of the British Colonies in North America. Part III of Volume V, in eleven chapters, covers the mainland provinces and presents the salient points of the history and growth of each. One chapter is the story of the northern tundra and of the explorers who invaded the far north-land; another chapter is an account of Nova Scotia, replete with tragedy and romance; the third

discusses New Brunswick as a link between Nova Scotia and Quebec; the fourth embraces the province of Quebec as the "history of two nations and one river"; the fifth deals largely with the development of the mines in Ontario; the sixth presents the story of the prairies as the dwelling place of peoples of many nations; and the seventh describes the mountains of the west and north-west and points out the responses to this topography. Each portion of this great colony is treated in a similar manner. The geographical and frequently the geological basis is presented first, then follows an account of the occupancy of the land and the stages of development and finally the resources of the section are introduced. Although it is impossible, in a small volume, to deal broadly with all phases of human development in this wide expanse, yet the author has given a valuable and thorough summary of the historical geography of the area.

Part IV of Volume V is more interesting still, perhaps, because the subject, Newfoundland, can hardly be treated, if properly done, in the usual way. It is "*sui generis* and an exception to the rule in the British Empire." The first half of the book tells the stories of discoveries of fisheries, colonization and of crises in which there is much romance and much diplomacy. The early history of the island teems with thrilling incidents of exploration and bravery; then came the controversies, "the din of three Anglo-French duels," and the third period of its history is filled with arguments over its industry and its destiny. The book ends with a few rare chapters on the fish. "Cod-fish, alive or dead, wet or dry, have exercised an all-pervading influence over the destiny of Newfoundland."

ROBERT M. BROWN.

The Iron Ores of Lake Superior. Containing Some Facts of Interest Relating to Mining and Shipping of the Ore and Location of Principal Mines. By Benedict Crowell and C. B. Murray. 186 pp., maps and index. The Penton Publishing Company, Cleveland, 1911. 9 x 6.

Describes the different mineral ranges and most of the mines on them; gives the history, geology, mineralogy and mining methods of the various districts; with maps showing the location of ore ranges and of the upper and lower lake ports.

Vancouver Island, B. C., Canada. The Treasure Island. Agriculture, Timber, Mines and Fisheries. A History of Its Resources by Districts. 126 pp. and illustrations. The Vancouver Island Development League, 1911. 10 x 6½.

Vancouver Island about a third as large as New York State if the nearby islands pertaining to it are included, is very rich in timber, coal, and other minerals, and its agricultural possibilities are great. The book, illustrated by photo-engravings, gives many glimpses of the island and of the opportunities it offers for all kinds of enterprise.

Beyond the Mexican Sierras. By Dillon Wallace. xxxv and 301 pp., map, illustrations and index. A. C. McClurg & Co., Chicago, 1910. $2. 8 x 5½.

A popular, well-written account of the author's journey in the little-known section of Mexico lying west of the Sierras and between the States of Sonora and Jalisco. In this part of western Mexico Mr. Wallace traveled, on muleback, over 1,000 miles gaining much information and taking many photographs. He has turned a large variety of material to good account in this book.

SOUTH AMERICA

L'Espansione Coloniale e Commerciale dell' Italia nel Brasile. By Dott. Pietro Ubaldi. 266 pp., index and bibliography. Ermanno Loescher & Co., Rome, 1911. 11 x 6½.

In 1905, 120,000 Italian emigrants settled in Brazil. In 1906 the Italian emigration into that Republic numbered 137,000 souls. This book gives the reasons why many thousands of Italians are seeking new homes or new opportunities to work in foreign lands. It then describes the various States of Brazil and notes the opportunities and advantages which each offers, if any, to foreign immigration. The book is a good specimen of the large amount of literature, much of it published by the government, that is constantly appearing in Italy for the guidance of Italian emigrants.

South American Trade. By Charles M. Pepper. 17 pp. and illustration. Alexander Hamilton Institute, New York, 1911. 8½ x 5½.

One of a series of lectures delivered in New York City. The short paper indincates the kinds of information and the nature of the studies that are most helpful in extending trade into foreign countries.

The Andean Land. (South America.) By Chase S. Osborn. Vol. I, xv and 312 pp., maps and illustrations. Vol. II, x and 331 pp., illustrations and index. A. C. McClurg & Co., Chicago, 1909. 8½ x 5½.

The author, a newspaper publisher of Michigan, has written on western South America intelligently and in an interesting manner from the standpoint of the man of affairs. So far the book will be found useful. It is not a geographical work.

Chile. Its History and Development, Natural Features, Products, Commerce and Present Conditions. By G. F. Scott Elliot. With an Introduction by Martin Hume. Map, illustrations, appendix, bibliography and index. xxviii and 363 pp. Charles Scribner's Sons, New York, 1907. 9 x 6.

Out of the 341 pages of text that compose this volume, 240 are dedicated to historical subjects foreign, largely, to Geography. Hence they can only be alluded to here. Neither would they deserve much attention at any rate. The last 101 pages (chapters XVI to XXII) relate to various subjects. Thus chapter XVI treats promiscuously of Government, people, food, and more matter equally congenial. The author says some very good things but also some very unjust and silly ones. The chapter following is devoted to mining and to nitrates. Valparaiso and Santiago are next passed in review. On this occasion he informs us that the young German is inferior to the young Englishman in mental powers and physical strength. That young Englishman in Chile he describes: "The young Englishman is considered essentially a schoolboy. His real life consists in lawn tennis, cricket, or polo . . . The office work corresponds to lessons." There are interesting statistical data, though not many. The other parts of the book, to the end, are of the same character in general, quite light reading, quite often fair in the judgments they express, but not of the least special importance. It is one of the very numerous books on foreign lands with which literature is flooded to-day. Illustrations are generally good, but stale. A map of Chile, after the well-known type, clings to the end, and a pretended bibliography also graces the volume. AD. F. B.

AFRICA

The Delagoa Directory. 1911. A Year-Book of Information regarding the Port and Town of Lourenço Marques. 158 pp. A. W. Bayly & Co., Lourenço Marques, 1911. 2s. 6d. 8 x 5.

Gives much useful information about Lourenço Marques and is important for all who do business with that port. In the year ending June 30, 1910, 671 vessels entered, bringing 594,396 tons of freight and 53,300 passengers. The town is closely connected with the trade of South Africa, the channel has been lighted so that it may be used day or night and the port has been made as healthful as any other South African coast town by filling up marshy lands and other sanitary measures.

Mission en Éthiopie (1901–1903). Jean Duchesne-Fournet. Two Volumes and Atlas. Vol. I, xviii and 440 pp., maps and illustrations; Vol. II, xv and 387 pp. and illustrations. Masson et Cie, Paris, 1909. Atlas 1908.

These handsome volumes are a monument to the memory of the young explorer Jean Duchesne-Fournet who died in 1904, the year after he finished his explorations. Before he went to Abyssinia he spent much time in studious preparation for his work of investigating the various aspects of the little-known regions he and his party were to visit. The scientific mission was in the field from October, 1901, to January, 1903. It made its way from Jibuti to Adis Ababa by a new route through the Danakil region; it traversed, by partly unknown routes, the plateaus of Shoa and Gojam to Lake Tsana around whose shores the party traveled on foot. The leader also made a visit to the Walaga gold region. Special attention was given to ethnology, geology, zoology and the conditions of the people. The leader was aided in his work by a number of distinguished scientific men and the history of the exploration and results is divided into eight parts: Henri Froidevaux tells the story of the expedition from the material left by Duchesne and the reports of his comrades. The economic condition of Abyssinia is discussed by Capt. Collat, geology by Mr. Arsandaux, anthropology and ethnography by Dr. Verneau, and Pierre Lesne has six pages on insects. The maps were drawn by Mr. G. Hutin from Capt. Collat's itineraries and notes. There is a bibliography of 347 works, and an important section by J. Blanchart on the Abyssinian manuscripts collected by the expedition. The various sections are illustrated by numerous maps, nearly 200 illustrations in the text and 40 separate plates of photo-engravings. These handsome volumes are a worthy memorial of the young explorer who accomplished much for science in the last years of his life.

ASIA

The Native States of India. By Sir William Lee-Warner, K.C.S.I. xxi and 425 pp., map and index. Macmillan & Co., Ltd., London, 1910. $3.25. 9 x 5½.

A second edition of the book originally published under the title "The Protected Princes of India." It is an historical treatment of the British occupancy in India, comprehensive and broad in its content and method. It is easy to comprehend that a union of the disjointed principalities of India was a work of very slow growth continually involving new situations with no precedents to

help towards their solution. The opening chapter outlines the influences adverse to the union of the native states under one dominant authority. Up to 1813, until the close of Lord Minto's rule as governor-general, the policy was one of non-intervention towards the princes of the country and this, after a series of wars and treaties, grew into the "policy of the ring fence" in which a more perfect union was established and the maintenance of small forces, allies of the Imperial troops, was encouraged in the states within the Company's "boundary fence." Following came the "policy of subordinate isolation" in which Lord Hastings emphasized principally military coöperation; and this continued with slight changes to the "policy of subordinate union" and trust. The author then details the "price of union," discusses the duty of the sovereign towards the states in defending them against aggression and presents many other phases of the subject. The book is an excellent dissertation on the policy of Great Britain in India.

R. M. Brown.

The Special Population Census of Formosa. 1905. Report of the Committee of the Formosan Census Investigation. 210 pp., map and illustrations. Imperial Printing Bureau, Tokyo, 1909. 12s. 6d. 10½ x 7½.

Describes the methods devised for taking a census of the Formosan peoples in 1905. The aim of the Provisional Bureau of Census Investigation was to find how best to ascertain the real conditions of the population. This report gives both the methods and results of the census inquiry. The methods were devised beween September, 1903 and October 1st, 1905 when the first census under the Japanese régime was taken.

The census returns gave an enormous amount of information on many topics, some of which have not often been made the subject of census inquiry. For example, it was found that of the total female population of 1,406,224, 800,616 had been subjected to the practice of foot-binding; in other words 56.9 per cent. of the Formosan and Chinese women living in the island bind their feet. The occupation or non-occupation of foot-bound women was investigated with resulting statistics. The opium smokers and eaters form 3.9 per cent. of all the Formosans and Chinese; 88.2 per cent. of the smokers are males and 11.2 per cent. are females. This work is especially noteworthy as a study of census methods in a land whose conditions are, in some respects, exceptional.

The Story of Korea. By Joseph H. Longford. 400 pp., maps, illustrations, bibliography and index. Charles Scribner's Sons, New York, 1911. 9 x 6.

The author's personal acquaintance and administrative association with the affairs of the Far East have had a two-fold effect upon this volume. Large as it is in itself and very entertainingly written it is no more than an introduction to the history of Chosen as set forth by others more voluminously. That he has been able to condense and to bring out the more valuable portions of the work of duller historians is a matter on which the author should receive congratulations. On the other hand, his intimate association with a territory which has always been under dispute since its history began is complicating to any estimate of the value of this study of Korean affairs. Mr. Longford's affiliations are all with Japan, his service as British Consul was at Nagasaki, King's College in London has given him the chair of Japanese. It is pardonable in one so placed to look at the facing peninsula from Nagasaki through Japanese eyes, or from a London

professorial chair with full consciousness of the fact that his home land and the land of his professional activity entered into a stout treaty.

The author knows his Japan, he shows that he knows Korea well; if he finds reason to believe that Japan can bring order out of the ancient chaos of Chosen and put it to use it is impossible to find serious fault with his opinion. But in using his book it may be just as well to recognize that the attitude is strongly Japanese. So far as it relates the story of the Koreans the book is illuminative. It brings together much that we do not recall from earlier authorities. It offers, in a consistent and well balanced narrative, much that will serve the needs of those who wish to have a proper acquaintance with the affairs of the Hermit Kingdom up to the time of its virtual absorption by Japan.

WILLIAM CHURCHILL.

AUSTRALASIA AND OCEANIA.

New Zealand Plants and Their Story. By L. Cockayne. vii and 190 pp., 71 illustrations and index. John Mackay, Government Printer, Wellington, 1910. 8½ x 5½.

Dr. Cockayne has written a delightful account of the plants of New Zealand which, although addressed to the general reader, can be illuminating to persons skilled in botanical lore. The treatment covers, in the early pages, many topics in the border land of the science, but deals specifically with the island plants in the major portion of the book, discussing them on ecological lines. It opens with the general history of the plants in the geological eras, states the conditions of the struggle for existence and sets forth the rival doctrines of evolution by which changes of form are explained. The work ends with a suggestive chapter on plant teaching in the schools. The plan of the book dictates to some degree the various chapter headings; as Forests, Natural Shrubberies, Vegetation of the Coast, Meadows, Plants of the Fresh Water, Swamps and Bogs and the Plants of the Outlying Islands. The islands under the rain-forest climate, (adopting the classification of Schimper), the struggle of the coast plants against the shifting sands, the evolution of meadows, the naturalized plants and the stories of some of the common plants are some of the lines along which the discussion runs. An excellent selection of photographs is found in the volume. ROBERT M. BROWN.

Handbook of the Territory of Papua. Compiled by the Hon. Staniforth Smith, Administrator. 163 pp., maps, illustrations and appendices. Second Edition. Dept. of Lands, Papua. 1s. 6d. 9 x 6.

British New Guinea, now officially known as Papua, has in recent years attracted attention as a field for settlement and investment. The expansion of its agricultural industries is especially noteworthy. In this second edition the text has been largely rewritten and most of the information is brought down to the middle of 1909. It condenses a great deal of information relating to the territory.

Beach-La-Mar. The Jargon or Trade Speech of the Western Pacific. By William Churchill. 53 pp. and bibliography. The Carnegie Institution, Washington, 1911. 10 x 7.

Mr. Churchill defines jargon as the speech of necessity, the language of the borderland and tells how it most commonly begins in the need for communication between strangers. Among the most conspicuous examples he lists the *lingua*

franca of the Venetians and Genoese in the Levant, the "pidgin English" of the treaty ports of China, the Chinook, the jargon of the Western American fur trade, the Beach-La-Mar and others in Africa and Latin America. He describes the formation, the sources and use of the jargon, Beach-La-Mar, the vocabulary of which fills 22 pages.

EUROPE

Four Months Afoot in Spain. By Harry A. Franck. 370 pp. and illustrations. The Century Co., New York, 1911. $2. 8½ x 6.

One of the unique books of the day. The same fascinating style that marked the author's "A Vagabond's Journey Around the World," here holds the attention of the reader. The author's purpose is to get out of the usual track of travel, visit unfamiliar portions of the land and become acquainted with the people in their homes. You accompany the author as he tramps through districts which ordinary tourists have no way to reach and the regular traveler passes by; get in touch with the common life; find the condition of places and people vividly told and are made to see and feel the reality of the life described. Glimpses of the mines, rivers, fields, crops and climate enhance the story and add to its geographic value.

The reader feels, when he finishes the book that he is no longer a stranger in a strange land. The little that satisfies the masses in their daily existence; the amusements that break the monotony of their treadmill round; the religious duties that have become the necessary forms of their social life; all these are learned and understood. Beside the literary value of the work, there is much interest in the photographic views with which it is plentifully illustrated.

G. D. Hubbard.

Entstehung und Bau der deutschen Mittelgebirge. Von Dr. R. Reinisch. viii and 206 pp., 48 maps, profiles, etc. Dieterich'sche Verlagsbuchhandlung, Theodor Weicher, Leipzig, 1910. M. 3.50.

This book will be welcomed by many who have felt the want of a short modern handbook of the geology of Germany. Although strictly scientific in character it keeps aloof from purely technical discussions of geological and mineralogical matters, so that the reader can use it to advantage without being a specialist. It will probably be especially useful as an explanation to the sheets of the geological map of Germany where the larger book by Lepsius is not obtainable, as a guide for teachers who, with only limited time for study, feel the need of a more thorough acquaintance with the subject than the general textbook can convey, and also for the geographer or traveler who is looking for the geological foundations of the scenery, settlement, industries, traffic, etc., in studying or visiting the mountainous and hilly parts of Germany. For all these people the book will serve as an excellent manual and work of reference, especially by means of its fine alphabetical subject index and numerous sketches; and it would be even more useful if the arrangement of the matter did not suffer from a certain lack of system.

To be sure the author declares that his intention is to treat his subject in accordance with natural divisions and geographical units; but he does not always make good his intention. The different chapters are not marked in any way that might help the reader to distinguish main divisions and subdivisions; the summaries sometimes refer to one, sometimes to two chapters; even the types which

are used for the chapter headings are chosen without regard to their place in the system, so that one and the same type denotes what is printed in the index as a new chapter in one case, and in another, as a mere subheading. This lack of correspondence between the index and the text cannot but produce bewilderment in the minds of readers not previously familiar with the subject, and it even prevents those who are from gaining a perfect appreciation of the author's method and point of view. In a second edition attention ought to be paid to this matter that the book may become as popular as it deserves to be. M. K. GENTHE.

Albanien und die Albanesen. Landschafts- und Charakterbilder. Gesammelt von Paul Siebertz. 274 pp., and illustrations. Verlag der Manz'schen k. u. k, Hof-Verlag und Universitätsbuchhandlung in Wien, 1910. Kr. 5.

The author, editor-in-chief of the Vienna *Vaterland,* and one of the few travelers who has crossed the highlands of northern Albania, tells us with the skill of the journalist about his experiences in that out of the way corner of Turkey, its history and traditions, language, poetry, laws and customs, its landscape, and its political conditions. He has certainly succeeded in working the incongruous components of his story into one apparently homogenous whole which gives us a clear and interesting picture of the country as seen by a well educated contemporary. When we read in his book that, owing to the laws of vendetta, every man carries firearms; that disarming a man is a crime punishable by a fine of 2000 piasters; that a man may have all his property confiscated under the law of the land, with no exception but his arms; that the revolver belongs to the desk of the bishop as well as to the belt of the ministrant at high mass, then we understand that only shortsighted politicians, who have no idea of real conditions, can think of forbidding such a people the carrying of firearms.

The book is well illustrated, it contains an extensive bibliography of the country, and may be recommended for supplementary reading. M. K. GENTHE.

The Isles of Scilly. Their Story, their Folk and their Flowers. Painted and Described by Jessie Mothersole. Map, illustrations and index. xii and 244 pp. The Religious Tract Society, London, 1911. 10s. 6d. 9 x 7.

The author is an artist who illustrates her notes on the Scilly Islands by very pleasing pictures, the product of her own brush. She has recorded her impressions of these beautiful islands both in color and in words and both phases of the work are admirably carried out.

Das vorgeschichtliche Europa. Kulturen und Völker. Von Dr. Hans Hahne. 130 pp., illustrations and index. Verlag von Velhagen & Klasing, Bielefeld und Leipzig, 1910. Mk. 4. 10 x 7.

An able and interesting popular exposition of prehistoric man in Europe soundly based on scientific studies; together with many facts illustrating the arts of Greece and Rome. The 150 illustrations are excellent.

Le Royaume de Monténégro. Par M. C. Verloop. 101 pp. and map. Berger-Levrault, Éditeurs, Paris, 1911. 3 frs. 10 x 6½.

A monograph on this new kingdom giving chapters on its history, the manners and customs of the people, centers of the population, financial condition, progress of civilization and education, governmental régime, etc. When Nicolas I began his reign in 1880 as Prince of Montenegro there were only three schools in the country. To-day each village has its school.

POLAR

The Great White North. The Story of Polar Exploration from the Earliest Times to the Discovery of the Pole. By Helen S. Wright. xviii and 489 pp., maps, illustrations and index. The Macmillan Co., New York, 1910. $2.50. 7½ x 5½.

The book tells merely the human story; the struggles to reach a goal, the difficulties of travel, the hardships from cold and hunger, etc. Although such incidents may show "the splendid fibre of which" the explorer is made, it may be doubted whether they will make polar exploration any more popular with the sceptics or "stir the laymen to a better endurance of the burdens and perplexities of the common lot."

The book is largely a compilation of quotations from explorers' narratives, each traveler presenting his own story of his sufferings and dangers. Among the illustrations is an excellent series of photographs of voyagers to the frozen north from Sebastian Cabot down the centuries to Peary. R. M. BROWN.

EDUCATIONAL

A Systematic Geography of America. By George William Webb, B.A. 108 pp., with ten diagrams, maps, and index. Methuen & Co., Ltd., London, 1911. 1s. 7½ x 5.

This is the fourth book in a series which provides for a study of the geography of the world on lines recommended by the London Board of Education. In this small volume Mr. Webb has condensed as much of the geography of North and South America as is considered essential for candidates preparing for fairly advanced examinations. No doubt the book is fitted for British needs, but as geography is taught at present in our schools the book will hardly be useful here. If the time ever comes when our High Schools shall demand of each graduate some such systematized knowledge of the world, it is to be hoped that the World Series which shall be prepared for these students may embody the excellencies of the present volume while avoiding its defects.

It is surprising to find in a book bearing the imprint of the current year that "the chief economic importance of Alaska is in its seal fisheries, but it is thought the country possesses gold deposits." Here, too, is to be found the old belief in the intactness of the Japan Current after a journey across the Pacific. British students are also told that our states number forty-four, that our chief source of petroleum is in western Pennsylvania, and that Boston is regarded as the intellectual center of the United States. Such statements are an added evidence of how difficult it is for our British cousins to keep up with the rapid pace of things American, but they are perhaps the chief defects in what is otherwise an extremely well-ordered, compact, and comprehensive survey of the geography of the New World. C. W. HOTCHKISS.

Europe and the Mediterranean Region. By J. B. Reynolds, B.A. viii and 184 pp., maps, illustrations and index. Adam and Charles Black, London, 1911. 1s. 4d. 7 x 4½.

A text book intended for children in the upper classes of elementary and lower classes of secondary schools. The book is cogently and clearly written and illustrated chiefly by excellent black and white maps containing no more information than is intended for study purposes. The geography of the Continent is treated not by countries but by natural regions which certainly form broader

and more scientific units for description than small political divisions. Each chapter is supplemented by helpful summaries, questions and suggestions.

Exercises in Practical Geography on the British Isles. By Cyril R. Dudley. Maps. 60 pp. With supplement; The London Area. By J. A. White. 8 pp., maps. George Philip & Son, Ltd., London, 1911. 1s. 8 x 6½.

The author provides a manual of exercises in Geography for a limited area. The plan is deductive, in the main, and the book is designed for children in intermediate grades. England is studied from fourteen, Scotland from eight and Ireland from seven maps. Each map presents but one or two kinds of data and is followed with questions based on the map, or calling for comparisons or correlations involving two or more maps. Thus rainfall and altitude are correlated; railroads and cities or products; topography and roads, or occupations; place relations and commercial connections, etc. In this way, while the fundamentals of Geography are being discovered, the places are learned and always connected with a reason. An atlas should be used with the exercises. Two brief supplements, one on the London District and one on the Wirral Peninsula, illustrate a suggestive method of treating Home Geography. G. D. HUBBARD.

System der Welthandelslehre. Ein Lehr und Handbuch des internationalen Handels. Von Dr. Joseph Hellauer. Erster Band: Allgemeine Welthandelslehre. 1. Teil. xvi and 482 pp. Puttkammer & Mühlbrecht, Berlin, 1910. M. 10. 9½ x 6½.

A systematic and thorough treatment of the more general phases of international commerce. This volume, the only one published as yet, deals with the broader phases of the development of international commerce, such as its organization, commercial treaties, financial exchanges, etc. It is a good book both for advanced commercial courses and also as a work of reference. The remainder of the work will treat of the more special divisions of the subject, such as communications, transportation, etc.

Agricultural Instruction in the Public High Schools of the United States. By Clarence Hall Robison, Ph.D. 205 pp., map and index. Teachers College, Columbia University, New York, 1911. 10½ x 6½.

Gives a brief historical sketch of agricultural education, classifies the agencies that carry it on, shows the importance of agricultural instruction in the high schools, outlines the methods of teaching agriculture in a number of typical high schools and presents a great deal of detailed information on the purposes and methods of instruction in this branch. A large part of the material was collected by the author by personal visits to schools, universities, agricultural colleges, officers and teachers in a number of states.

GENERAL

The Mind of Primitive Man. By Franz Boas. x and 294 pp. The Macmillan Co., New York, 1911. $1.50. 7½ x 5½.

This is a series of lectures which Prof. Boas has twice delivered in communities as widely sundered as Boston and Mexico. Each lecture, now become a chapter in a volume whose title is most attractive, has received preliminary presentation in various publications. It will be found convenient that this volume includes the author's views upon the changes in our own community which mark

the progress of the second generation of immigrant stock. This paper has been roundly discussed, it has been somewhat sharply attacked and is still *sub judice;* it is distinctly advantageous, therefore, that now we may study it in connection with the scheme of which it forms an integral part in the author's order of development.

This inclusion shows that the volume contains some material that is by no means to be classed as pertaining to primitive man. There is other of the sort. In fact when we segregate the material of this kind, the amount of material herein which may be classed as primitive man's psychology is slight in extent and of diffuse treatment. It is all interesting, but does it really carry the title?

Inasmuch as I have the privilege of my signature I feel it proper to write personally in this matter. A work of this sort is secondary; it must, to have value, sum up the results of observation directed upon the minds of many men all primitive and living under primitive conditions or under such an approach thereto as will admit of our removing the alien factor which we have introduced by our coming. Now where is this basic material to be found? "Unfortunately," says Prof. Boas with whole truth, "the descriptions of the state of mind of primitive people, such as are given by most travellers, are too superficial to be used for psychological investigation." In this our author confesses that the foundation is lacking to such studies. The only foundation can lie in the intimate examination which shall set forth clearly and with quick sympathy what this and that primitive man thinks and how he thinks it.

Because of an act of self-abnegation it is not in contravention of proper modesty that I note that I have made such a study of one primitive folk. It takes years for that sort of thing. The babes whom I have seen fondled in savage arms have come to maturity and have gone to savage ends or have settled down as leaders of their slim communities. It seemed to me that in all these years of study, much of it spent in daily life and abundant observation, I might have fitted myself to describe the psychology of just that one race, the Polynesian of the South Sea. That book I have written, and having written I have again read it, more than 100,000 words; without regret I have put it aside; it is not the book of the savage mind, not the Polynesian mind which I had hoped to record. There are yet unsolved problems of sense perception, of speech, of logical method; the very principia are yet to find. Sometime I may return to the unfinished task, I hope that I may. But if there can be such failure of performance in just one group of primitive minds, where is there any greater success in the comprehension of other groups? And without such work of the first degree the work of the second degree is without authority. We cannot establish the principles of mental activity until we have a clear comprehension of the nature and operation of mental acts. First must come the particular, and the particular is not always comprehensible. Drawing just from my own experience, why do the Hu-Mangareva speak of the "red rainbow"? Is that optical or intellectual? Or who can tell why all Polynesians on looking at a print rotate it through ninety degrees widdershins; is that optical? Or why do they say, and think, "down and up," "west or east?" Or why do so many of them in the finger count reckon the fingers which are turned down and not those stuck up? If we fail to comprehend these little things we cannot go on to the greater.

This volume of essays by Prof. Boas in a field which we must regard as untillable as yet will serve its own good end if it prove a challenge and a stimulus to ethnologists to provide the basic material. Just a beginning has been

made. In the Cambridge expedition to Torres Straits a few initial attempts were made to secure records along the methods of the new psychology. Whatever be the method employed the need is great for intelligent and appreciative collection of data. WILLIAM CHURCHILL.

Burmese Self-Taught. (In Burmese and Roman Characters) with Phonetic Pronunciation. (Thimm's System.) By R. F. St. A. St. John, Hon. M.A. 168 pp. E. Marlborough & Co., London, 1911. $1.50. 7 x 5.

This forms one of a series of pocket books for the study of alien languages according to a system which, in the case of the European languages, appears to include a laundry list in place of a chrestomathy. The guiding principle of the method seems to be a system of transliteration. The appeal in any such method must lie to the eye, it therefore creates an artificial Burmese which the eye of man never shall see. So far as the aim is to educate the ear and thence the speech organs through sight we see no advantage in this over the simpler method of learning the vernacular alphabet and its sound through the characters which will be always presented to the sight. An alphabet such as that of the Pali with its 32 consonants, 8 vowels and 3 diphthongs should entail no great task of acquisition for the adult student; and once acquired by the eye and the proper sounds enjoined upon the organs of speech there remains no need for the ungainly columns of transliteration. Sixteen pages of this work are devoted to the alphabet and phonetics, the whole of the syntax of the language is crowded within exactly the same number of pages. Few languages are satisfactorily to be learned by sight alone, the difficulty is infinitely greater when the language is tonal; this handbook dismisses the subject of the tones with scarcely more than a hint that therein lies the greatest difficulty. If the system of pronunciation prove feasible the vocabularies and lists of conversations topically arranged should assist the newcomer in the land. WILLIAM CHURCHILL.

History of Geology. By Horace B. Woodward. (In series: A History of the Sciences.) viii and 204 pp., illustrations, bibliography and index. G. P. Putnam's Sons, New York, 1911. 75 cents. 6½ x 4½.

According to this concise little volume the beginnings of recorded geologic observation date from about 500 B. C. and even geologic theories developed as early as 300 B. C. From these foregleams the growth of the body of geologic truth is fascinatingly traced through Greek, Roman, and Monastic stages, into Zittel's "Heroic Age" in 1790-1820. Chapters II to IV recount the names and achievements, in a more or less biographical style, of a long list of founders of Geology.

Over 350 persons connected with the science are mentioned, together with many organizations,—Surveys and Societies. The pioneer work of Sedgwick and Murchison in interpreting the structure and unraveling the succession of events in the early Paleozoic of the Lake Districts and much of Wales shows the method of geology and the great obstacles overcome in getting a start in stratigraphic geology. The fundamental work of Lyell and Dana in setting down the principles of Geology is graphically sketched. The brief chapter on Paleontology clearly sets forth the position of both those who would interpret geologic succession on a life basis alone, and those who give large place to geographic changes, and physical geology in the solution of problems of geologic synchronism.

G. D. HUBBARD.

L'État présent et de l'avenir de l'Islam. Par E. Montet. Index. 157 pp. Paul Geuthner, Paris, 1911. 10 x 6½.

Each of these six brilliant and sympathetic lectures is a sketch, yet each seizes upon some one unit in the sketch for development into portrait detail and portrait accuracy. The topic is one of great moment to France, which stands between Great Britain and the Netherlands in the second rank among the great Moslem powers of Christendom. It is trite, merely statistical and census reading, to note that King George might challenge the right of the Sultan to the position of Commander of the Faithful.

When the student shakes off the dominance of columns of mere figures it will appear convincingly that France stands first in the order of Moslem powers. Great Britain has to deal in India with a large mass of Mohammedans as a political factor, racial and economic problems loosely associated by the recital of a creed almost as brief and all-comprehensive as the Schma Yisroel of the senior branch of the Semitic monotheism. Not at all on religious grounds are the Indian followers of the Prophet a disturbing factor. Faith with them is in coma. Still less in the East Indies do the Dutch have to hold in check a proselytizing movement, Islam has spent its bolt in the island chain from Atjeh to the Philippine Moros. The sternest and most repressive ordinance which Batavia has found it necessary to fulminate is a mere rider to the poor law to the effect that the holy man who has made the Hadj and has come back from Mecca must work for his living just as before.

But the Islam of France, in its great African domain, is yet a living faith, though strangely in parts distorted. It is alive with the zeal of religious conquest. It seeks to carry the Crescent into the wilds quite as hotly as when the Saracens from Barbary swept Europe to their fatal encounter with the hammer of Charles Martel, and that we must not forget was on the French face of the Pyrenees. We recall Tippu Tib living in rude profusion in Zanzibar. The world united in denouncing him, a most agreeable person to meet, as the scourge of Africa. He would be the last to deny that he ravaged the forests of the Congo in his slave raids. Yet we must not forget that in some manner mysterious to our comprehension, Tippu Tib was a missionary of the faith in which he believed. At the limit of to-day's incursion upon the pagans of the forest there would be found slaves yoked in pairs, villages aflame, the horror of cruel war; yet where yesterday's raid had done its work we should find the folk rebuilding their thatched houses about the charred posts. But a change had been made in some mysterious fashion. Five times a day the call to prayer was rising from throats which scarcely had caught the trick of the words and every face was turned to the Kaaba. We may scarcely comprehend the polemics of such theology, but it is a very vital force.

Prof. Montet has caught the spirit of this pouring out of soul. His sketches show that Islam is always to be dealt with in the Africa which France has under control. It is impracticable to go into the detail of his six chapters, each a gem of research and each instinct with sympathy, in which he sets forth the orthodoxy and the heresy of Islam, the power of the fraternities, the movement toward reform, in which we fear that he overestimates the vitality of Babism and Behaism. His attitude is well set forth in the fourth lecture: "Moral superiority is the true superiority. To understand a people, to understand and to respect its religion, is to have it half won over; this is in every instance the road which leads, by little and little and by successive stages, to comprehension, to prudent administration, to peace and to prosperity." WILLIAM CHURCHILL.

Gut und schlecht Wetter. Von Dr. Richard Hennig. Maps and Illustrations. 118 pp. In series: Aus Natur und Geisteswelt. B. G. Teubner, Leipzig, 1911. M. 1.25. 7 x 5.

A popular exposition of weather facts, chiefly illustrated by many official weather maps, the purpose being to teach the public to read these maps and draw from them correct conclusions. One map, for example, shows, for March 19, 1897, a large area of low atmospheric pressure extending over Scandinavia, the British Isles and western Russia with high barometer over Western Europe, south of the Baltic, with the result that the weather conditions of the western Mediterranean lands were extended, for that day, over western Europe nearly to the Baltic, giving to Germany an unusually early taste of balmy spring weather. Great summer heat in Germany is illustrated by a weather map of July 15, 1907 showing low pressure over the eastern Atlantic and the adjoining coasts and high pressure on the plains of Russia, transferring much of the accumulated heat of the eastern part of Europe to the western lands bordering the sea. Each season of the year is thus represented by maps, covering its various weather phases, with full explanations in the text. The book is simply and clearly written and is well adapted to fulfil its purpose.

GUIDE BOOKS

The Complete Pocket-Guide to Europe. By Edmund C. Stedman. Edited by Thomas L. Stedman. xxxiv and 505 pp., maps and index. William R. Jenkins Co., New York, 1911. 5 x 3½. [New maps and other improvements have been added in this latest revision.]

Paris et ses Environs. Manuel du Voyageur. Par Karl Baedeker. xxvi and 481 pp. 14 maps, 34 plans, index and appendix. 17th Edition. Karl Baedeker, Leipzig, 1911. 6 Mk. 6½ x 4½.

Cook's Tourists' Handbook for Normandy & Brittany. New Edition. viii and 264 pp., maps, index and appendix. Thomas Cook & Sons, London, 1910. 3s. 6½ x 5.

Austria-Hungary, with Excursions to Centinje, Belgrade, and Bucharest. Handbook for Travellers by Karl Baedeker. xii and 602 pp., 71 maps, 77 plans, 2 panoramas, and index. Eleventh edition, revised and augmented. Karl Baedeker, Leipzig, 1911. 10s. 6 x 4. [Contains over thirty new maps and several new plans.]

A Grèce (Guides-Johanne). By Gustave Fougères. lxxxv and 520 pp., 27 maps, 56 plans and 30 illustrations, and tables showing communications between France and Greece. 2e Édition, revue et corrigée. Hachette et Cie, Paris, 1911. 15 Fr. 6 x 4.

Guide du Nil au Jourdain par le Sinai et Pétra. Sur les traces d'Israël. Par Barnabé Meistermann. xlvii and 381 pp., 9 maps, 13 plans of towns and monuments, 72 photo-engravings, illustrations and index. Alphonse Picard et Fils, Paris, 1909. 7 Fr. 6½ x 4½. [Especially for those who wish to follow the route of the Children of Israel between the Nile and the J n.]

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NEW MAPS

EDITED BY THE ASSISTANT EDITOR

System Followed in Listing Maps.

Title. As on original, if possible. If lacking or incomplete, necessary matter enclosed in brackets.

Scale. Natural (unless otherwise on original), followed by equivalent in miles to one inch. If no scale on original, approximate scale enclosed in brackets.

Coordinates. Approximate limiting coordinates of map given. Where map-net lacking, coordinates, if possible of determination, given in brackets. All meridians referred to Greenwich. If map not oriented N., orientation given.

Colors. Number of tints of separate symbols, not number of color printings given. Black or basal color not considered a color.

Source. If map separately published, name of institution issuing it, place and date given. If a supplement, title of paper or book, author, periodical, volume, number, year and pages given.

Comment. Descriptive and critical. In brackets.

Regional Classification. Major political divisions the unit, as a rule, except for United States and Canada. Boundaries of continents according to Siever's *Länderkunde*, Kleine Ausgabe.

MAPS ISSUED BY UNITED STATES GOVERNMENT BUREAUS

U. S. GEOLOGICAL SURVEY

Topographic Sheets

Alaska. Copper Mountain and Vicinity (Prince of Wales Island). Surveyed in 1908. 1:62,500 (1 in.=0.99 mile). 55°17′30″ - 55°10′30″ N.; 132°41′ - 132°30′30″ W. Contour interval 100 ft. Alaska Sheet No. 540 B.

California. (a) Gilsizer Slough Quadrangle. (Sutter County). Surveyed in 1909. 1:31,680 (1 in.=0.50 mile). 39°7′30″ - 39°0′ N.; 121°45′ - 121°37′30″ W. Interval 5 ft. Edition of Sept. 1911.

(b) Grimes Quad. Surveyed in 1905 and 1909. 1:31,680. 39°7′30″ - 39°0′ N.; 122°0′ - 121°54′30″ W. Interval 5 ft. Edit. of Aug 1911.

(c) Mills Quad. (Sacramento County). Surveyed in 1908–1909. 1:31,680. 38°37′30″ - 38°30′ N.; 121°22′30″ - 121°15′ W. Interval 5 ft. Edit. of Aug. 1911.

(d) Ostrom Quad. Surveyed in 1909. 1:31,680. 39°7′30″ - 39°0′ N.; 121°37′30″ - 121°30′ W. Interval 5 ft Edit. of July 1911.

(e) Sutter Quad. Surveyed in 1909, 1:31,680. 39°15′ - 39°7′30″ N.; 121°45′ - 121°37′30″ W. Interval 5 ft. Edit. of Sept. 1911.

(f) Yuba City Quad. Surveyed in 1909. 1:31,680. 39°15′ - 39°7′30″ N.; 121°37′30″ - 121°30′ W. Interval 5 ft. Edit. of July 1911.

[Belong to the series of half-mile-to-an-inch maps of the Sacramento Valley. Map (f) includes Marysville and Yuba City].

(g) Topographic map of the Sacramento Valley, California. Reduced from U. S. Geological Survey Atlas Sheets. Surveyed in 1903–1910 in cooperation with the State of California. 1:250,000 (1 in.=3.95 miles). 40°15′ - 38°0′ N.; 122°20′ - 121°0′ W. Contour interval 25 ft. 4 colors. With inset: Index to Topographic Maps of Sacramento Valley on scale of 1:31,680 or 2 inches=1 mile. [1:1,250,000 (1 in.=19.7 miles)]. Edit. of Oct. 1911.

[Valuable general map of Sacramento Valley based on the detailed sheets of which maps (a) to (f) are specimens. Symbols for tule marsh and electric power line added to the usual series of conventional signs].

Colorado. De Beque Oil Field. Surveyed in 1910. 1:62,500. 39°29′ - 39°19′ N.; 108°23′ - 108°9.5′ W. Interval 50 ft. Edit. of Sept. 1911.

Idaho-Wyoming-Utah. Montpelier Quad. Surveyed in 1909. 1:125,000. 42°30′ - 42°0′ N.; 111°30′ - 111°0′ W. Interval 50 ft. Edit. of Sept. 1911.

Ohio. (a) Cumberland Quad. Surveyed in 1908–1909. 1:62,500. 40°0′ - 39°45′ N.; 81°45′ - 81°30′ W. Interval 20 ft. Edit of Aug. 1911.

(b) Oxford Quad. Surveyed in 1909. 1:62,500. 39°45′ - 39°30′ N.; 84°45′ - 84°30′ W. Interval 20 ft. Edit. of Aug. 1911.

(c) Spencerville Quad. Surveyed in 1909. 1:62,500. 40°45′ - 40°30′ N.; 84°30′ - 84°15′ W. Interval 10 ft. Edit. of June 1911.

(d) Summerfield Quad. Surveyed in 1909. 1:62,500. 40°0′ - 39°45′ N.; 81°30′ - 81°15′ W. Interval 20 ft. Edit. of Aug. 1911.

Oklahoma. (a) Sallisaw Quad. Surveyed in 1897. Culture revised in 1909. 1:125,000. 35°30′ - 35°0′ N ; 95° - 94°30′ W. Interval 50 ft. Edit. of Sept. 1911.

(b) Sansbois Quad. Surveyed in 1896–97. Culture revised in 1909. 1:125,000. 35°30′ -35°0′ N.; 95°30′ - 95°0′ W. Interval 50 ft. Edit. of Aug. 1911.

Wyoming. Shoshone Quad. Surveyed in 1884–85. Partial revision in 1910. 1:125,000. 44°30′ - 44°0′ N.; 111°0′ - 110°30′ W. Interval 100 ft. Edit. of Sept. 1911.

Maps Accompanying Publications

CALIFORNIA. (a) Topographic Map of Northeastern Part of Chico Quadrangle, California, Showing Drift Mines and Neocene Channels. 1:125,000 (1 in.=1.97 mile). 40°46′ - 40°0′ N.; 121°41′ - 121°30′ W. 2 colors.

(b) Geologic Map of Oroville and Table Mountain, Chico and Marysville Quadrangles, Butte County, California. 1:125,000. 39°41′ - 39°25′ N.; 121°40′ - 121°30′ W. 10 colors.

(c) Map of the Deep Placer Mines near North Bloomfield and Relief, Nevada County, California. After A. D. Gassaway. [1:34,000. (1 in.=0.54 mile)]. [39°32′ N. and 120°54′ W.].

(d) Geologic Map Showing Tertiary Formations and Channels in Parts of Jackson and Big Trees Quadrangles. Geology by H. W. Turner and F. L. Ransome. 1:125,000. 38°10′ - 38°0′ N.; 120°36′ - 120°20′ W. 6 colors.

(e) Geologic Map Showing Tertiary Formations and Channels between St. Andreas and Mokelumne Hill. Geology by F. L. Ransome. Channels outlined by J. M. Boutwell and W. Lindgren. 1:63,360 (1 in.=1.00 mile). 38°18′ - 38°12′ N.; 120°45′ - 120°40′ W. 5 colors.

Pls. XIV, XV, XX, XXVI and XXVII, "The Tertiary Gravels of the Sierra Nevada of California" by W. Lindgren, *Prof. Paper* 73, 1911.

CALIFORNIA-NEVADA. (a) Index map showing location of region of auriferous gravels of the Sierra Nevada. [1 in.=60 miles. (1:380,160)] 41° - 37° N.; 123° - 119° W.

(b) Outline of Tertiary channels and of dislocations along the eastern base of the Sierra Nevada. [1:1,600,000 (1 in =25.3 miles)]. 40½° - 37½° N.; 121¾° - 119° W.

(c) [Geologic] Map of the Northern Part of the Sierra Nevada, California and Nevada. Geology compiled from folios of Geologic Atlas of the United States. Base from U. S. post route maps of California and Nevada. 1:750,000 (1 in.=11.84 miles). 40½° - 37½° N.; 122° - 119° W. 8 colors.

Figs. 1 and 3 and Pl. I, "The Tertiary Gravels of the Sierra Nevada of California" by W. Lindgren, *Prof. Paper* 73, 1911.

[Map (a) an index map showing limits of U. S. G. S. topographic sheets and geologic folios published and limits of map (c).

Map (c) a valuable generalization of the detailed geologic maps of the region.]

MICHIGAN. (a) Geologic Map and [two] Sections of the Marquette Iron-Bearing District, Michigan. Originally prepared by C. R. Van Hise and W. S. Bayley, 1896. Revised to December 1, 1910, to include explorations of Cleveland Cliffs Iron Company, Oliver Iron Mining Company, and geological work of A. E. Seaman and others. 1910. 1:63,360 (1 in.=1.00 mile). [46°34′ - 46°25′ N.; 88°7′ - 87°20′ W.]. 21 colors. With inset of vicinity of Republic forming continuation of main map. Same scale. [46°25′ - 46°22′ N.; 88°2′ - 87°56′ W.].

(b) Map of Carp River Fault, Michigan. By W. N. Smith. 1909. [1 in =¼ mile (1:15,840)]. [46°27′ N. and 87°25′ W.]. 5 colors.

(c) Detailed Map of Quartzite Ridges of Teal Lake, Michigan, showing faulting and unconformity of Ajibik Quartzite and Mesnard Quartzite. By A. E. Seaman. 1909. [1:8,000 (1 in.=667 ft.)]. [46°30′ N. and 88°35′ W.]. 14 colors.

Pls. XVII, XVIII and XIX, "The Geology of the Lake Superior Region" by C. R. Van Hise and C. K. Leith, *Monograph* 52, 1911.

[On map (a) relief in contours; interval 50 ft]

MICHIGAN. Outcrop Map of Swanzy District, Michigan. Compiled from information furnished by Cleveland-Cliffs Iron Company and others. [1:60,000 (1 in.=0.95 mile)]. [46°20′ N. and 87°25′ W.]. Fig. 41, *Monograph* 52, 1911.

MICHIGAN. Geologic Map of Dead River Area, Michigan. By A. E. Seaman. 1910. 1:62,500 (1 in.=0.99 mile). [46°42′ - 46°32 N.; 87°55′ - 87°31′ W.]. 4 colors. Pl. XX, *Monograph* 52, 1911.

MICHIGAN. (a) Map of Perch Lake District, Showing Distribution of Outcrops. Compiled from commercial surveys (by Van H. Manning). 1:62,500 (1 in.=0.99 mile). 46°30′ - 46°15′ N.; 88°45′ - 88°30′ W. 2 colors.

(b) Geologic map of west end of Marquette district, Michigan. By W. N. Merriam and M. H. Newman. [1:100,000 (1 in.=15.8 miles)]. [46°35′ N. and 88°10′ W.].

Pl. XXI and Fig. 42, *Monograph* 52, 1911.

[Pl. XXI a regular sheet of the topographic map, on which outcrops have been indicated].

MICHIGAN. Geologic Map of the Crystal Falls District, Including Parts of the Felch Mountain and Marquette Districts, Michigan. Corrected to January 1, 1909. 1:125,000 (1 in.=1.97 mile). 46°30′ - 45°59′ N.; 88°30′ - 87°45′ W. 14 colors. Pl. XXII, *Monograph* 52, 1911.

[Geology superimposed on topographic map. Contour interval 40 ft. Topography revised by A. T. Fowler, 1909].

MICHIGAN. Geologic Map of the Calumet District, Michigan. Compiled by C. K. Leith from surveys by W. S. Bayley, R. C. Allen, Edward Steidtmann and others. 1909. 1:90,000 (1 in.=1.42 mile). [45°59′ - 45°54′ N.; 88°7′ - 87°36′ W.]. 8 colors. Pl. XXIII, *Monograph* 52, 1911.

MICHIGAN. Geologic Map of Iron River District, Mich. By R. C. Allen. Topography by U. S. Geol. Surv. with additions to culture by Mich. Geol. Surv. Geology by Geol. Surv. of Mich. 1909. 1:45,000 (1 in.=0.71 mile). 46°15′ - 45°59′ N.; 88°45′ - 88°30′ W. 11 colors. Pl. XXIV, *Monograph* 52, 1911.

MICHIGAN. Geologic Map of Menominee Iron District, Michigan. Revised to January 1, 1909. Topography by E. C. Bebb; surveyed in 1898; culture revised to 1909 by A. T. Fowler. Geology by C. R. Van Hise, W. S. Bayley and J. N. Clements. Surveyed 1896–1899. 1:62,500 (1 in.=0.99 mile). 45°55′ - 45°44′ N.; 88°0′ - 87°44′ W. 14 colors. With three geological sections. Pl. XXVI, *Monograph* 52, 1911.

[Geology superimposed on topographic map; contour interval 20 ft.].

MICHIGAN. (a) Geologic Map of Keweenaw Point Copper District, Michigan Revised by A. E. Seaman, Michigan College of Mines, 1909. 1:250,000 (1 in.=3.95 miles). [47°30′ - 46°46′ N.; 89°53′ - 87°40′ W.]. 6 colors.

(b) Map Showing Location of Copper-Bearing Lodes and Mines on Keweenaw Point. [1 in.= 7 miles (1:443,520)]. [47°35′ - 46°38′ N.; 89°50′ - 87°33′ W.].

Pls. XXVIII and XLIX, *Monograph* 52, 1911.

MICHIGAN-MINNESOTA-WISCONSIN. [Four extracts from U. S. G. S. topographic sheets to illustrate physiography of district:]

(a) Rib Hill, a monadnock rising above the peneplain in Wisconsin. 1:125,000 (1 in.=1.97 mile). 44°55′ N. and 89°40′ W.

(b) Typical monoclinal ridge topography. Isle Royal, Michigan. 1:62,500 (1 in.=0.99 mile). 48°10′ N. and 88°10′ W. 2 colors.

(c) The Duluth escarpment and even upland of peneplain on Duluth gabbro in Minnesota. The spits at Duluth. 1:62,500. 46°47′ N. and 92°6′ W. 2 colors.

(d) Lake shore escarpment of Archean schists and Huronian quartzite near Marquette, Michigan. 1:62,500. 46°33′ N. and 87°25′ W. 2 colors.

Maps (a) and (b), Pl. IV, maps (c) and (d), Pl. V, *Monograph* 52, 1911.

MICHIGAN-WISCONSIN. Sketch map to show general relations of iron-bearing rocks, principally upper Huronian, in Crystal Falls, Iron River, Florence and Menominee districts. [1 in.=12 miles (1:760,320)]. [46°25′ - 45°45′ N.; 89°0′ - 87°20′ W.]. Fig. 43, *Monograph* 52, 1911.

MINNESOTA. (a) The drainage of the St. Louis and Mississippi headwaters before the stream captures along the Duluth escarpment. [1:1,900,000 (1 in.=30.0 miles)]. [47°30′ - 46°25′ N.; 94°0′ - 91°30′ W.].

(b) The drainage of the St. Louis and Mississippi headwaters at present, after stream captures and diversions. Same scale and co-ordinates as map (a).

Figs. 9 and 10, *Monograph* 52, 1911.

MINNESOTA. Geologic Map of the Vermilion Iron-Bearing District, Minnesota. C. R. Van Hise, Geologist in charge. Detailed geology by J. Morgan Clements, W. S. Bayley and C. K. Leith. Field work ended in October, 1900. Revised to January 1, 1910. 1:125,000 (1 in.=1.97 mile). Oriented N. 15° E. 48°15′ - 47°45′ N.; 92°30′ - 90°42′ W. Pl. VI, *Monograph* 52, 1911.

MINNESOTA. Geologic Map of the Mesabi District, Minnesota. By C. K. Leith. (Corrected to January 1, 1911). 1:62,500 (1 in.=0.99 mile). Oriented N. 21° E. 47°45′ - 47°5′ N.; 93°50′ - 91°47′ W. 11 colors. With three sections. Pl. VIII, *Monograph* 52, 1911.

[Relief shown in brown contours; interval 20 ft.].

MINNESOTA. Geologic Map of Pigeon Point, Minnesota. By W. S. Bayley, 1890. Topography from U. S. Lake Survey. Contour interval 20 ft. 1910. With two sections. 1:22,500 (1 in.=0.35 mile). [48°0′ N. and 89°35′ W.]. 9 colors. Pl. XII, *Monograph* 52, 1911.

MINNESOTA. (a) Map of Central Minnesota, Including Cuyuna District. Compiled by C. K. Leith from map by C. W. Hall and commercial surveys of the Cuyuna district by Carl Zappfe and others. 1910. 1:1,250,000 (1 in.=19.73 miles). [46°55′ - 45°20′ N.; 95°10′ - 92°0′ W.]. 5 colors.

(b) Map of Part of the Cuyuna Iron District of Minnesota. Compiled by C. K. Leith and Carl Zappfe from commercial surveys. Corrected to April 1, 1910. 1:125,000 (1 in.=1.97 mile). Oriented N. 30° E. [46°40′ - 46°10′ N.; 94°20′ - 93°50′ W.].

Pls. XIV and XV, *Monograph* 52, 1911.

MINNESOTA-WISCONSIN. (a) St. Louis River at the stage when it cut its valley and emptied directly into Lake Nipissing. [1:183,000 (1 in.=2.9 miles)]. [46°50′ - 46°35′ N.; 92°25′ - 91°52′ W.].

(b) The present St. Louis River which has been converted into an estuary by post-Nipissing tilting. Same scale and co-ordinates as map (a).

Figs. 69 and 70, *Monograph* 52, 1911.

NEW MEXICO. Geologic Map of the Vicinity of the Burro Mountains, Grant County, N. Mex. [1 in.=2 miles (1:126,720)]. 32°45′ - 32°30′ N.; 108°28′ - 108°18′ W.
Pl. IV, "Metalliferous Ore Deposits near the Burro Mountains, Grant County, New Mexico" by S. Paige, *Bull.* 470-C, 1911, pp. 3-22.

ONTARIO. Geologic Map of the Animikie Iron-Bearing District, North of Thunder Bay, Ontario. By W. N. Smith and R. C. Allen. [1:85,000 (1 in.=1.3 mile)]. [48°37′ N. and 88°47′ W.].
Pl. XIII, "The Geology of the Lake Superior Region" by C. R. Van Hise and C. K. Leith, *Monograph* 52, 1911.

UNITED STATES–CANADA. (a) Sketch map of Lake Superior region, showing iron districts, shipping ports and transportation lines. [1:6,300,000 (1 in.=99.4 miles)]. [49½° - 43° N.; 95½° - 83° W.].
(b) Relief Map of the Lake Superior Region, Showing the Larger Topographic Features. 1 in. =about 60 miles (1:3,800,000). [49½° - 44° N.; 95° - 84° W.].
(c) Generalized topographic map of the Lake Superior region. [1:5,700,000 (1 in.=90.0 miles)]. [49° - 44° N.; 95° - 84° W.].
(d) The topographic provinces of the Lake Superior region, with some subdivisions of the peneplain. Same scale and co-ordinates as map (c).
(e) Map of Lake Superior basin, designed to show the structure and extent of the Keweenawan trough. (After Irving, R. D., *Mon.* U. S. Geol. Survey, Vol. 5, 1883, Pl. XXVIII). [1 in.=50 miles (1:3,168,000)]. [49°10′ and 45°20′ N.; 93°0′ - 84°30′ W.].
(f) Geologic Map of the Lake Superior Region, with [two] Sections. 1910. Base compiled . . . from U. S. Geological Survey atlas sheets, Land Office records, compilations by State Geological Surveys, official maps of Canada and other data. Geology compiled by C. R. Van Hise and C. K. Leith. 1:1,000,000 (1 in.=15.78 miles). Same coordinates as map (c). 25 colors.
Fig. 2, Pl. II, Figs. 4, 5 and 59, and Pl. I, "The Geology of the Lake Superior Region by C. R. Van Hise and C. K. Leith, *Monograph* 52, 1911.
[The "Lake Superior region" comprises the ore-bearing districts scattered around Lake Superior. For the purposes of the monograph and on the above maps it is bounded by the conventional limits of 49° and 44° N. and 95° and 84° W..
Pl. II is a photograph of a model. Fig. 4 shows 580, 1,000 and 1,700 ft. contours and Mississippi-St. Lawrence-Hudson Bay divides. Fig. 5 distinguishes between peneplain, monoclinal ridges, monadnocks, mesas.
Pl. I is a fundamental geologic map of the region].

UNITED STATES–CANADA. [Seven maps illustrating the Pleistocene geology of the Lake Superior region. (49° - 44° N.; 95° - 84° W.). (1:5,700,000 [1 in.=90.0 miles)]:]
(a) Sketch map showing the glaciation of the Lake Superior region, giving names of lobes and probable directions of ice flow. (b) Glacial Lake Nemadji. (c) Glacial Lake Duluth. (d) Hypothetical intermediate stage with the expansion of glacial Lake Chicago and the later stage of glacial Lake Agassiz near the northwest corner. (e) Glacial Lake Algonquin. (f) Part of Nipissing Great Lakes. (g) Sketch map showing Driftless Area and regions of older drift, last drift and lake deposits.
Figs. 60, 63, 64, 65, 66, 67 and 68, "The Geology of the Lake Superior Region" by C. R. Van Hise and C. K. Leith, *Monograph* 52, 1911.

WISCONSIN. Sketch map showing Baraboo, Fox River valley, Necedah, Waushara and Waterloo pre-Cambrian areas of south-central Wisconsin. [1:900,000 (1 in.=14.2 miles)]. [44°5′ - 43°5′ N.; 90°6′ - 88°46′ W.]. Fig. 53, *Monograph* 52, 1911.

WISCONSIN. Outcrop Map of the Florence Iron District, Wisconsin. From map by W. N. Merriam, 1904, partly revised by W. O. Hotchkiss, 1910. 1:62,500 (1 in.=0.99 mile). [45°59′ - 45°30′ N.; 88°24′ - 88°4′ W.]. 6 colors. Pl. XXV, *Monograph* 52, 1911.

WISCONSIN-MICHIGAN. Geologic Map of the Penokee-Gogebic District. By C. R. Van Hise and R. D. Irving. (Revised to January 1, 1909). 1:90,000 (1 in.=1.42 mile). Oriented N. 8° E. 46°31′ - 46°14′ N.; 9°7′ - 89°30′ W. 13 colors. Pl. XVI, *Monograph* 52, 1911.
[Relief in contours; interval 20 ft.].

WISCONSIN-MICHIGAN-MINNESOTA. Four maps to illustrate glaciation of district: three, extracts from U. S. G. S. topographic sheets; and one, extract from chart of Lake Survey:]
(a) Terminal Moraine and Outwash Plain Topography in Glaciated Area of Western Wisconsin. 1:62,500 (1 in.=0.99 mile). 45°25′ N. and 92°35′ W. 2 colors.
(b) Glaciated Valley of Portage Lake on Keweenaw Point in Michigan, with hanging valley of Huron Creek. 1:30,000 (1 in.=0.47 mile). 47°8′ N. and 88°34′ W. 2 colors.
(c) Characteristic Driftless Area Topography in Northern Wisconsin, showing normal mature drainage. 1:125,000 (1 in.=1.97 mile). 44°50′ N. and 89°50′ W. 2 colors.
(d) Characteristic Muskeg and Ground Moraine Topography in Glaciated Area of Minnesota, showing post-Glacial young drainage. 1:62,500. 45°12′ N. and 93°10′ W. 2 colors.
Maps (a) and (b), Pl. XXX, maps (c) and (d), Pl. XXXI, *Monograph* 52, 1911.

U. S. LAKE SURVEY

MICHIGAN. Grays Reef Passage, Lake Michigan, Showing New Shoal and Amended Sailing Courses. Surveyed under the direction of Lieut. Col. C. S. Riché, Corps of Engineers, U. S. Army, October 30, 1911. 1:80,000 (1 in.=1.26 mile). 45°51′ - 45°40′ N.; 85°15′ - 85°4′ W. 1 color. Accompanies note with similar title, *Suppl.* No. 7 to *Bull.* No. 20, Survey of N. and N. W. Lakes, 1911, pp. 12–13.

BUREAU OF AMERICAN ETHNOLOGY

NEBRASKA. Title Map. Omaha Reservation, Thurston County, Nebraska. By H. L. Keefe. [1:550,000 (1 in.=8.7 miles)]. [42°12′ - 42°0′ N.; 96°45′ - 96°12′ W.]. Pl. 65, "The Omaha Tribe" by A. C. Fletcher and F. La Flesche, *27th Annual Report Bur. Amer. Ethnol.*, 1911, pp. 15-654.

NEBRASKA–KANSAS–IOWA–MISSOURI, etc. Country Known to the Omaha. [1:5,000,000 (1 in.= 78.99 miles)]. 46° - 36½° N.; 105½° - 88½° W. Pl. 21, "The Omaha Tribe" by A. C. Fletcher and F. La Flesche, *27th Annual Report Bur. Amer. Ethnol.*, 1911, pp. 15-654.
[Shows extent of country known to the Omaha, also Omaha villages and principal Indian battlefields].

NORTH AMERICA

MEXICO. Karte der Bevölkerungsdichte der Republik Mexiko. Von Dr. E. Wittich. 1:20,000,000 (1 in.=315.65 miles) 33° - 13° N.; 117° - 86° W. Accompanies "Die Volkszählung in der Republik Mexiko im Jahre 1910" by E. Wittich, *Pet. Mitt.*, Vol. 57, II, 1911, pp. 191–194.

SOUTH AMERICA

BOLIVIA. (a) Skizze der Umgebung des Chorolque. 1:200,000 (1 in.=3.16 miles). 21°10′ S. and 66°08′ W.

(b) Umgegend von La Paz. (Flusssystem). [1:1,500,000 (1 in.=23.7 miles)]. 16°0′ - 16°50′ S.; 68°45′ - 67°35′ W.

Skizzen 1 and 2 on pp. 50 and 94, "Reisen in Bolivien und Peru" by R. Hauthal, *Wiss. Veröffentl. Gesell. f. Erdk. zu Leipzig*, Vol. 7, 1911.

BOLIVIA–ARGENTINA–CHILE–PERU. Reiseroute von Prof. Dr. R. Hauthal (Oktober 1907 bis März 1908). [1:11,000,000 (1 in.=173.61 miles). Scale incorrectly given as 1:1,100,000]. 9° - 29° S.; 78° - 63° W. 3 colors. Accompanies "Reisen in Bolivien und Peru" by R. Hauthal. *Wiss. Veröffentl. Gesell. f. Erdk. zu Leipzig*, Vol. 7, 1911.

BRAZIL. Völkerkarte des Gebietes am oberen Rio Negro und Yapurá mit besonderer Berücksichtigung der Aruakstamme. Entworfen von Dr. Theodor Koch-Grünberg. 1:3,000,000 (1 in.=47.34 miles). 2 3/5° N. - 2° S.; 71½° - 66 3/5° W. 4 colors. Accompanies "Aruak-Sprachen Nordwestbrasiliens und der angrenzenden Gebiete" (first part) by T. Koch-Grünberg, *Mitt. Anthropol. Gesell. in Wien*, Vol. 31, 1911, pp. 33–153.

PERU. Gebiet von Oroya [1:1,500,000 (1 in.=23.7 miles)]. 11°15′ - 12°0′ S.; 76°15′ - 75°40′ W.]. Skizze 3 on p. 149 in "Reisen in Bolivien und Peru" by R. Hauthal, *Wiss. Veröffentl. Gesell. f. Erdk. zu Leipzig*, Vol. 7, 1911.

AFRICA

AFRICA. Africa, showing the Progress of Exploration. 1:20,000,000, or 1 in.=315.65 miles. 37° N. - 35° S.; 20° W. - 60° E. 5 colors. Accompanies "Problems in Exploration: Africa" by F. R. Cana, *Geogr. Journ.*, Vol. 38, 1911, pp. 457–469.

[An excellent map showing the present (1911) state of our knowledge of the continent. It distinguishes between areas mapped (1) from systematic surveys, (2) from less reliable surveys including good route traverses, (3) from rough route traverses, (4) principally from native report and (5) areas entirely unknown. It is an admirable solution of the fundamental problem, difficult, however, because of its comprehensiveness, of summarizing our knowledge of a given area of the earth's surface].

BRITISH EAST AFRICA. (a) Map of Suk Country. Reproduced . . . from the Official War Office maps (Africa, 1:1.000,000, sheets 86 and 87). [1:500,000 (1 in.=7.89 miles)]. Oriented N. 37° E. 2°34′ - 0°17′ N.; 35°0′ - 36°38′ E.

(b) Baringo District Showing Tribal Division. [1:2,100,000 (1 in.=33 1 miles)]. 3½° - 1/5° N.; 35° - 37° E.

(c) Kerio Suk Country. [1:365,000 (1 in.=5.8 miles)]. 2° - 1° N.; 35⅛° - 36° E.

Accompany "The Suk: Their Language and Folklore" by M. W. H. Beech, Oxford, 1911.

[Maps (a) and (c), especially the latter, embody valuable original material On maps (a) and (b) the ethnic boundary of the Suk country is shown. On maps (a) and (c) relief is shown in sketch contours].

GERMAN EAST AFRICA–BELGIAN CONGO–BRITISH EAST AFRICA. Die neue deutsch-belgische Grenze im Kiwu-Gebiet. [1:1,700,000 (1 in.=26 8 miles)]. 0°50′ - 3°40′ S.; 28°40′ - 32°12′ E. Accompanies "Das neue Grenzabkommen zwischen Deutschland und Belgisch-Kongo im Kiwusee-Gebiet" by M. Moisel, *Deutsche Kolonialzeitung*, Vol. 28, 1911, pp. 607–608.

NORTHEASTERN AFRICA. (a) Map Showing Meteorological, River and Rain Gauge Stations [in the Nile Basin]. 1:7,500,000, or 1 in.=118.37 miles. 33° N. - 5° S.; 21° - 41° E. 1 color. With inset: [The Nile Delta]. [1:3,000,000 approx. (1 in.=47.3 miles approx.)]. 31°45′ - 29°55′ N.; 29°44′ - 32°24′ E. 1 color.

(b) [Four maps of northeastern Africa showing:] Normal Rainfall of June, July, August and September. 1:50,000,000 (1 in.=789.13 miles). 43° N. - 6° S.; 20° - 63° E. 1 color.

Pls. I and IX, "The Rains of the Nile Basin and the Nile Flood of 1909" by J. I. Craig. *Survey Dept.* [of Egypt] *Paper* No. 17, Cairo, 1910.

[Map (b) shows isohyetals in inches].

MADAGASCAR. Bassin inférieur de la Mamba. No scale. [18°50′ S. and 47°23′ E.]. Accompanies "Note sur les bassins réservoirs de la vallée inférieure de la Mamba, affluent de l'Ikopa (province de Tananarive)" by G. Carle, *Bull. Écon., Colon. de Madagascar & Dépendances*, Vol. 10, 1910, pp. 169–173.

MADAGASCAR. Les mines d'or d'Andavakoera (Madagascar). [1:300,000 (1 in.=4.73 miles)]. [13°10′ S. and 49°20′ E.] 1 color. With geological section. Accompanies "Les mines d'or de la région d'Andavakoera (Nord de Madagascar)" by A. Bordeaux, *Bull. Écon., Colon. de Madagascar & Dépendances*, Vol. 10, 1910, pp. 187–198.

MADAGASCAR. Esquisse d'une Carte Tectonique de l'Ouest [of Madagascar]. 1:3,500,000 (1 in.=55.24 miles). [11° - 26° S.; 42° - 52° E.]. 8 colors. Accompanies "Notes sur la vallée permo-triasique et le contact des terrains métamorphiques et des terrains sédimentaires dans l'Ouest de Madagascar" by P. de la Bathie, *Bull. Écon., Colon. de Madagascar & Dépendances*, Vol. 10, 1910, pp. 199–235.

[Shows, on a map of the whole of Madagascar, the escarpments formed by the western border of the Archean nucleus of the center of the island and by the eastern border of the sedimentary formations of its western slope].

MOROCCO. Schematische Darstellung der Hauptübergänge über den westlichen Hohen Atlas. 1:2,000,000 (1 in.=31.57 miles). 31°40′ - 30°20′ N.; 9°55′ - 6°35′ W. Accompanies paper with similar title by Hübner, *Pet. Mitt.*, Vol. 57, II, 1911, pp. 237–240.

TRIPOLI. Sketch map of Tripoli and Its Dependencies. 1:15,000,000, or 1 in.=236.74 miles. 35° - 22° N.; 8° - 26° E. Accompanies "Tripoli" by A. Vischer, *Geogr. Journ.*, Vol. 38, 1911, pp. 487–494.
[Critical map showing essential features].

ASIA.

BRITISH INDIA. Burma (Upper and Lower). From a tracing by the Geographical Society, founded on a map published by the Survey of India, with recent additions by Sir George Scott. With inset forming S. E. continuation of main map. [1:10,000,000 (1 in.=157.8 miles)]. Coordinates including inset: 28° - 10° N.; 91° - 109° E. Accompanies "Burma: A Handbook of Practical Information" (and edition) by J. G. Scott, London, 1911.
[Gives boundaries and names of districts].

CHINA. Carte Provisoire du Yang Tseu Kiang Supérieur et du Cours Inférieur du Ya Long. Levée par le Capitaine de frégate Audemard, Mars-Juin 1910. Exploration du Comte Ch. de Polignac. 1:1,000,000 (1 in.=15.78 miles). 29° - 25 3/5° N.; 99¾° - 105° E. 2 colors. With inset showing location of main map: 1:20,000,000 (1 in.=315.6 miles). 42° - 18° N.; 90° - 135° E. 2 colors. Pl. I, "Exploration hydrographique du Ya-long et du Yang-tseu supérieur" by L. Audemard, *La Géogr.*, Vol. 24, 1911, pp. 1–30.

CHINA. Map Showing Itinerary of Edwin J. Dingle's Travels in the Chinese Empire, 1909–10. [1:7,000,000 (1 in.=110.5 miles)]. 32° - 20½° N.; 95½° - 123½° E. 1 color. With inset: "Rough Outline of Author's Travels in Far East. [1:80,000,000 approx. (1 in.=1262.6 miles approx.)] 1 color. Accompanies "Across China on Foot" by E. J. Dingle, New York, 1911.

JAPAN. Geological Map of the Echigo Oil Field. 1:200,000 (1 in.=3.16 miles). [38°0′ - 36°50 N., 138°0′ - 139°12′ E.] 13 colors. With inset: Distribution of Petroleum in Japan, 1:10,000,000 (1 in.=157.83 miles), and four geological sections. Accompanies "Preliminary Note on the Geology of the Echigo Oil Field" by T. Iki, *Memoirs Imp. Geol. Surv. of Japan*, No. 2, 1910, pp. 29–57.

JAPAN. (a) [Fourteen maps of harbors equipped with tidal observatories, accompanying "Results of the Harmonic Analysis of Tidal Observations made at Various Ports of Japan" by S. Hirayama, *Journ. Coll. Sci.*, Imp. Univ. Tokyo, Vol. 28, Art. 7, April 1911:]
(1) Takaw (Formosa). [1:4,800 (1 in.=400 ft.)]. 22°36′52″ - 22°36′20″ N.; 120°16′0″ - 120°16′23″ E. Pl. II.
(2) Kiirun (Formosa). [1:27,000 (1 in.=0.43 mile)]. 25°10.5′ - 25°7.6′ N.; 121°44.0′ - 121°46.3′ E. Pl. IV.
(3) Fukabori (Kiushiu). [1:43,000 (1 in.=0.68 mile)]. 32°43.3′ - 32°39.0′ N.; 129°47.0′ - 129°50.7′ E. Pl. VI.
(4) Hosojima (Kiushiu). [1:22,000 (1 in.=0.35 mile)]. 32°26.4′ - 32°24.9′; 131°39.0′ - 131°41.9′ E. Pl. VIII.
(5) Tonoura (Honshiu). [1:10,000 (1 in.=0.16 mile)]. 34°55′7″ - 34°54′3″ N.; 132°3′48″ - 132°4′45″ E. Pl. X.
(6) Kobe (Honshiu). [1:25,000 (1 in.=0.39 mile)]. 34°42.0′ - 34°39.3′ N.; 135°10.3′ - 135°12.6′ E. Pl. XII.
(7) Kushimoto (Honshiu). [1:37,000 (1 in.=0.58 mile)]. 33°29.5′ - 33°25.4′ N.; 135°44.4′ - 135°47.9′ E. Pl. XIV.
(8) Wajima (Honshiu). [1:25,000]. 37°25.3′ - 37°23.3′ N.; 136°52.2′ - 136°55.3′ E. Pl. XVI.
(9) Aburatsubo (Honshiu). [1:13,000 (1 in.=0.21 mile)]. 35°10.3′ - 35°9.0′ N.; 139°36.4′ - 139°37.7′ E. Pl. XVIII.
(10) Yokohama. [1:38,000 (1 in.=0.76 mile)]. 35°29.7′ - 35°25.5′ N.; 139°36.7′ - 139°40.3′ E. Pl. XX.
(11) Iwasaki (Honshiu). [1:20,000 (1 in.=0.32 mile)]. 40°35.5′ - 40°34.0′ N.; 139°53.6′ - 139°56.3′ E. Pl. XXI.
(12) Ayukawa (Honshiu). [1:77,000 (1 in.=1.22 mile)]. 38°21.6′ - 38°13.1′ N.; 141°27.7′ - 141°35.0′ E. Pl. XXIII.
(13) Otaru (Hokkaido). [1:25,000]. 43°13.9′ - 43°11.2′ N.; 140°59.3′ - 141°1.9′ E. Pl. XXV.
(14) Hanasaki (Hokkaido). [1:44,000 (1 in.=0.69 mile)]. 43°17.8′ - 43°13.0′ N.; 145°32 7 - 145°37.3′ E. Pl. XXVII.
(b) [Outline map of Japan showing location of above harbors]. [1:5,400,000 (1 in.=85.2 miles)]. Pl. I.
[On maps listed under (a) soundings given and relief shown in contours].

TURKEY IN ASIA. Zweite Reise in der Asiatischen Türkei 1899 von Dr. Max Freiherrn v. Oppenheim.
(a) Blatt II. Von Haleb nach Orfa . . . und Ain-tâb. 1:600,000 (1 in.=9.47 miles). 37°55′ - 36°10′ N.; 36°53′ - 41°7′ E. 3 colors. With inset: Orfa und Umgebung. 1:300,000 (1 in.=4.73 miles). 37°20′ - 37°5′ N.; 38°44′ - 39°15′ E. 2 colors.
(b) Blatt III: Westlich von Aintab über Adanâ und Eregli nach Koniah. 1:600,000. 37°55′ - 36°10′ N.; 32°30′ - 36°50′ E. 3 colors. With inset: Übersicht der Reisewege Dr. Max Frhrn v. Oppenheim's in Syrien und Klein-asien 1899. 1:3,700,000 (1 in.=58.39 miles). 38°10′ - 33°20′ N.; 33°7′ - 41°15′ E. 3 colors.
Taf. 18 and 23, *Pet. Mitt.*, Vol. 57, II, 1911.
[Inset on map (b) an index map showing location of the large-scale sheets. Sheet I listed in *Bull.*, Vol. 43, 1911, p. 798].

AUSTRALASIA AND OCEANIA.

BISMARCK ARCHIPELAGO. [Skizze der Blanche-Bucht (Neupommern) mit den Vulkanen Ghaie und Raluan]. 1:200,000 (1 in.=3.16 miles). 4°10′ S. and 152°10′ E. Accompanies "Die Tätigkeit der Vulkane Ghaie und Raluan (Neupommern)" by K. Sapper, *Pet. Mitt.*, Vol. 57, II, 1911, pp. 135–139.

KAISER WILHELMS LAND. Karte der Durchquerung des Hinterlandes von Finschhafen (Kaiser-Wilhelms Land) durch die Missionare G. Pilhofer und Flierl und Architekt H. Meier. 1:400,000 (1 in.=6.31 miles). 6°8′ - 5°4′ N.; 146°53′ - 148°2′ E. 3 colors. Taf. 24, "Eine Reise in das Hinterland von Finschhafen (Kaiser-Wilhelms Land)" by G. Pilhofer, *Pet. Mitt.*, Vol. 57, II, 1911, pp. 187–191.

PAPUA. Central Papua, New Guinea. Route and Explorations of the Expedition of D. Mackay and W. S. Little. 1908-9. 1:500,000, or 1 in.=7.89 miles. 6°42′ - 8°0′ S.; 143°30′ - 145°25′ E. 3 colors. With inset showing location of main map. 1:10,000,000, or 1 in.=157.83 miles. 2° - 12° S.; 140° - 151½° E. 3 colors. Accompanies "The Mackay-Little Expedition in Southern New Guinea," *Geogr. Journ.*, Vol. 38, 1911, pp. 483-487.

[Additional material for filling up the continually decreasing blank areas on the map of New Guinea.]

EUROPE

AUSTRIA-HUNGARY. (a) Sketch of Neighbourhood of Kerka Falls, Dalmatia. [1:121,000 (1 in.=1.9 mile). Scale incorrectly given as 1:37,500]. [43°55′ - 43°45′ N.; 15°50′ - 16°5′ E.].

(b) Sketch Map of Neighbourhood of Topolje Falls [1:42,500 (1 in.=0.67 mile). Scale incorrectly given]. [44°3′ N. and 16°14′ E.].

(c) Plan of Topolje Falls [1:4,100 (1 in.=342 ft.)]. Same coordinates as map (b).

(d) Sketch Map of Neighbourhood of Pliva Falls, Bosnia. [1:110,000 (1 in.=1.7 mile)]. [44°23′ - 44°18′ N.; 17°7′ - 17°18′ E.].

Figs. 1, 2, 3 and 4, "Constructive Waterfalls" by J. W. Gregory, *Scott. Geogr. Mag.*, Vol. 27, 1911, pp. 537-546.

AUSTRIA-HUNGARY. Strategische Eisenbahnen und Eisenbahnpläne in Bosnien und in der Herzegowina. 1:3,700,000 (1 in.=58.39 miles). 46°0′ - 42°10′ N.; 14°20′ - 19°50′ E. Accompanies note with similar title by O. Kreutzbruck v. Lilienfels, *Pet. Mitt.*, Vol. 57, II, 1911, pp. 173-174.

[Distinguishes between standard and narrow gage railroads, projected and in operation].

AUSTRIA-HUNGARY. Lignes de fracture dans la partie occidentale du grand bassin hongrois, d'après de Lóczy. [1:1,400,000 (1 in.=22.1 miles)]. [47°3′ - 46°34′ N.; 17°8′ - 19°20′ E.]. Fig. 5, "Les lignes de fracture de la croûte terrestre" by A. Pécsi, *La Géogr.*, Vol. 24, 1911, pp. 31-40.

AUSTRIA-HUNGARY. Umgebungskarte von Drosendorf [showing location of paleolithic and neolithic settlements]. 1:56,000 (1 in.=0.88 mile). [48°52′ N. and 15°38′ E.]. Accompanies "Das Plateaulehm-Paläolithikum des nordöstlichen Waldviertels von Niederösterreich" by F. Kiessling and H. Obermaier, *Mitt. Anthropol. Gesell. in Wien*, Vol. 31, 1911, pp. 1-32.

BULGARIA. [Two maps:] Bevölkerungsdichte in Bulgarien. Entworfen von Prof. Dr. C. Kassner. 1:3,000,000 (1 in.=47.34 miles). 5 colors. (a) 1887. (b) 1905. Taf. 17, "Die Bevölkerung in Bulgarien und ihre Siedlungsverhältnisse" by A. Ischirkoff, translated by A. Kassner, *Pet. Mitt.*, Vol. 57, II, 1911, pp. 117-122 and 179-185.

[Ungeneralized map showing density of population by administrative districts. Six degrees of areal and eight of urban density shown.]

GERMANY. Deutsche Ansiedlung in der Ostmark nach dem Stande vom 1. Januar 1911. 1:1,500,000 (1 in.=23.67 miles). 55° - 51° N.; 15° - 20° E. 3 colors. Sonderbeilage 63, *Geogr. Anzeiger*, Vol. 12, 1911.

[Distinguishes between areas in which more than half of the inhabitants are Poles and those in which more than half are Germans. Shows the estates bought by the "Ansiedlungskommission" for purposes of German colonization.]

GREAT BRITAIN AND IRELAND. The Old Course of the Solent. [1:1,800,000 (1 in.=28.4 miles)]. [51½° - 50¾° N.; 3° W. - 0°.]. Accompanies "Geography at the British Association, Portsmouth Meeting, 1911" by A. J. Herbertson, *Geogr. Journ.*, Vol. 38, 1911, pp. 504-514.

THE NETHERLANDS. [Map of the northern Netherlands showing the plan adopted for the reclamation of the Zuyder Zee]. [1:1,600,000 (1 in.=25.3 miles)]. [53°40′ - 52°0′ N.; 4°10′ - 6°45′ E.]. Accompanies "Einfluss der Abschliessung der Zuidersee auf die Flutgrösse ausserhalb der Abschliessung" by A. v. Horn, *Ann. Hydrogr. u. Marit. Meteorol.*, Vol. 39, 1911, pp. 485-488.

SWITZERLAND—FRANCE. (a) Hydrographie du Bassin de Genève. [1:300,000 (1 in =4.73 miles)]. [46°23′ - 46°3′ N.; 5°50′ - 6°12′ E.].

(b) Capture de Theiry. [1:50,000 (1 in.=0.79 mile)]. [46°8′ and 6°4′ E.].

Figs. 9 and 10, "Un cas de capture aux environs de Genève" by C. Rabot, *La Géogr.*, Vol. 24, 1911, pp. 44-46. (Reproduced from *Archives des Sciences phys. et nat. de Genève.*)

WORLD AND LARGER PARTS

WORLD. Funkentelegraphenkarten. III. Weltkarte. Nach amtlichen Quellen und privaten Ermittelungen. [Van der Grinten's Projection:] equatorial scale 1:40,000,000 (1 in.=631.30 miles). 84° N. - 53° S.; 150° E. - 130° W. 2 colors. Accompanies, as Taf. 28, note by L., *Pet. Mitt.*, Vol. 57, II, 1911, p. 240.

[Valuable map showing location of wireless telegraphy stations and their range of call. Distinguishes between public and government stations. Maps I (Western Europe) and II (North America) were published as Taf. 10 and 20 in *Pet. Mitt.*, Vol. 57, I, 1911].

OCEANOGRAPHICAL

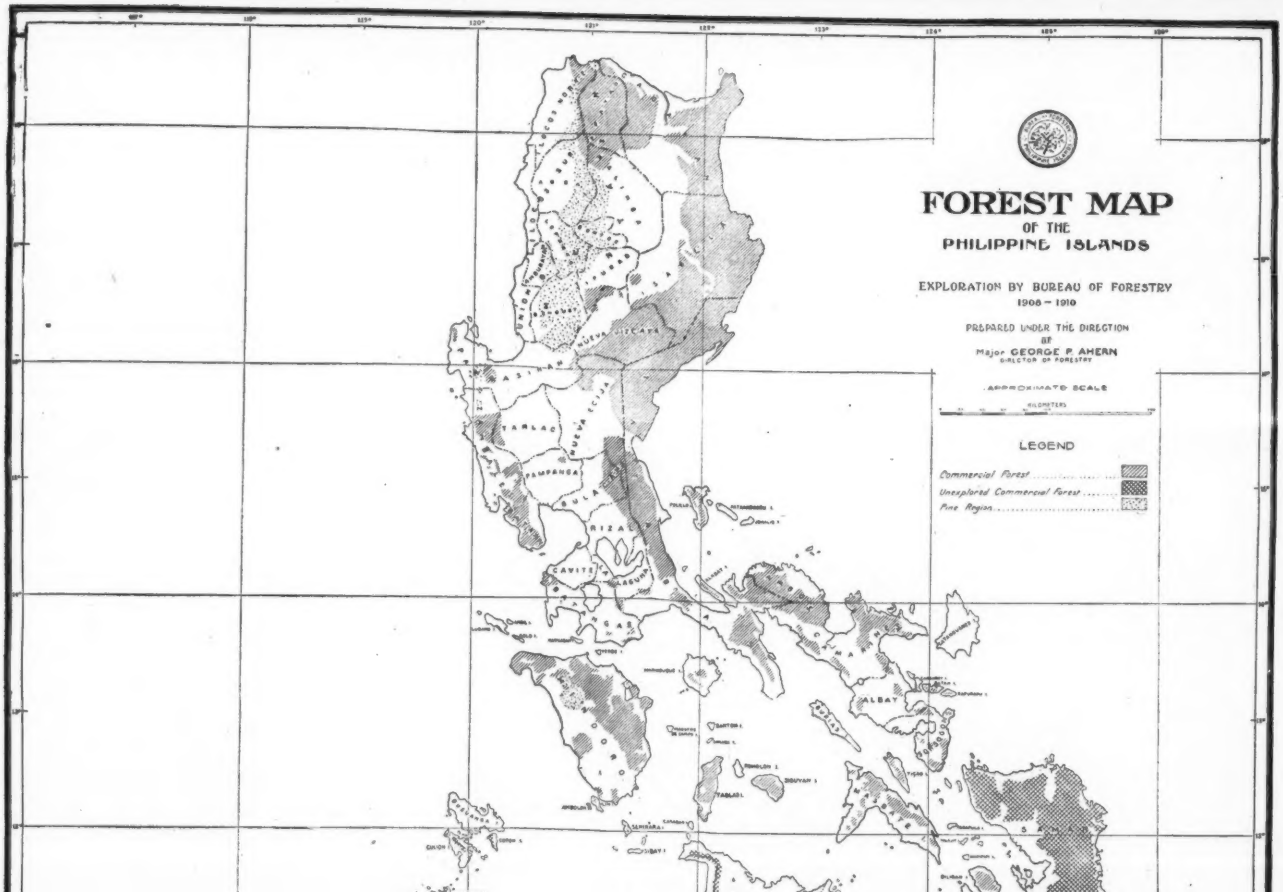
NORTH ATLANTIC OCEAN. Reiseweg und Lotungen der Deutschen Antarktischen Expedition zwischen den Azoren und Pernambuco. [Mercator's Projection: equatorial scale 1:30,000,000]. 40° N. - 10° S.; 50° - 20° W. Taf. 25, "Ozeanographische Arbeiten der Deutschen Antarktischen Expedition, II. Bericht" by W. Brennecke, *Ann. Hydrogr. u. Marit. Meteorol.*, Vol. 39, 1911, pp. 464-471.

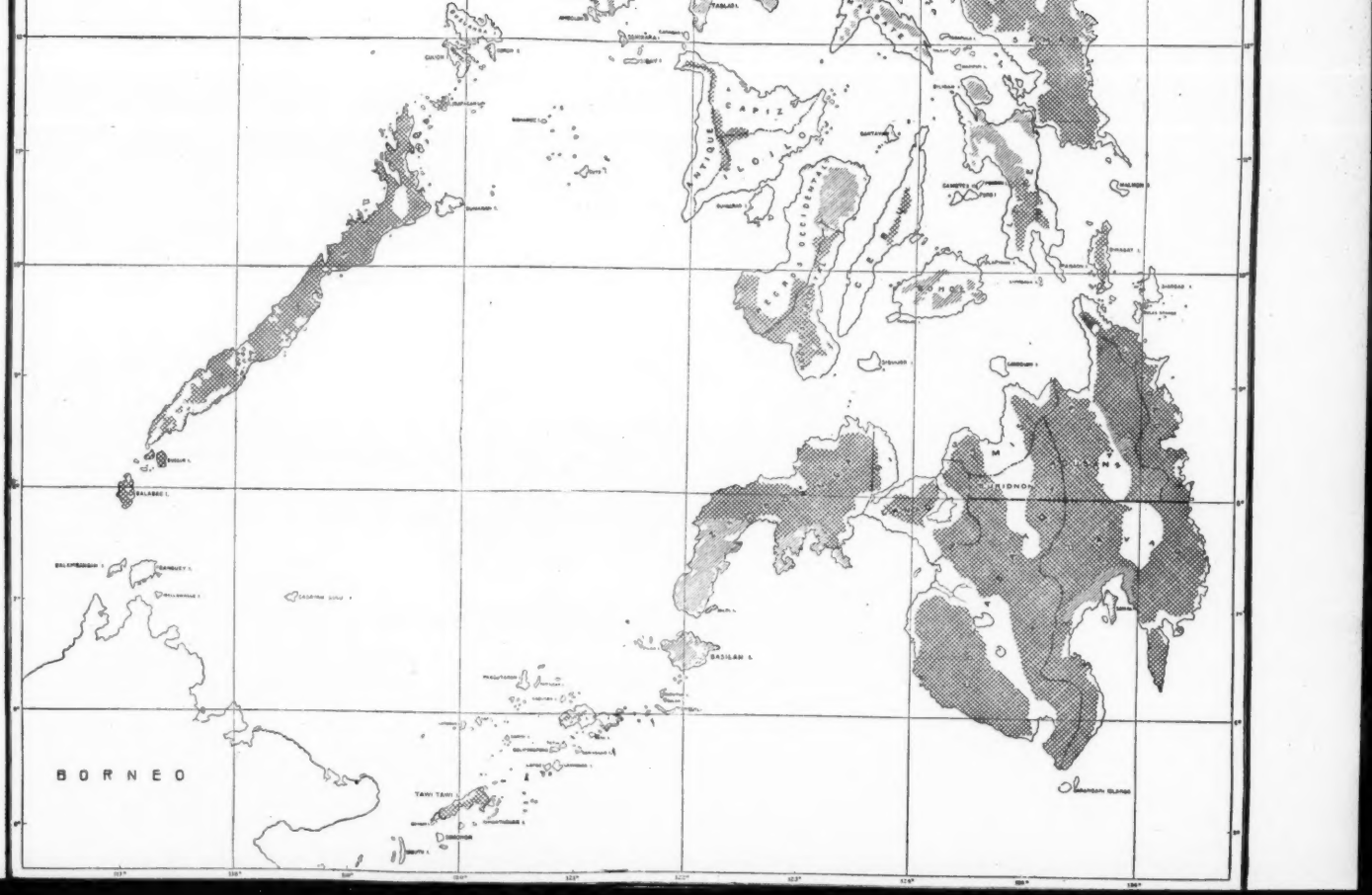
HISTORICAL

BRAZIL. [Sections from three maps showing the mouth of the Amazon:] (1) Egerton Map. (2) Juan de la Cosa [Map]. (3) Diego Ribeiro [Map] [1529]. Accompany "The Egerton Map of Early American Discoveries" by O. A. Derby, *Geogr. Journ.*, Vol. 38, 1911, pp. 494-504.

CARTOGRAPHICAL

FRANCE. Index Diagram Showing for France the Sheet Lines of the Air Map. [1:1,400,000 (1 in.=179.9 miles)]. 52° - 42° N.; 5° W. - 8° E. Fig. 1, "International Air Map and Aeronautical Marks" by C. Lallemand, *Geogr. Journ.*, Vol. 38, 1911, pp. 469-483.


FOREST MAP
OF THE
PHILIPPINE ISLANDS
EXPLORATION BY BUREAU OF FORESTRY
1908 – 1910
PREPARED UNDER THE DIRECTION
OF
Major GEORGE P. AHERN
DIRECTOR OF FORESTRY
APPROXIMATE SCALE
KILOMETERS
LEGEND
Commercial Forest
Unexplored Commercial Forest
Pine Region
NUEVA VIZCAYA
TARLAC
PAMPANGA
BULACAN
RIZAL
CAVITE
ALBAY


BORNEO
MINDORO
PANAY
NEGROS
CEBU
BOHOL
MINDANAO
BASILAN I.
TAWI TAWI
SULU SEA